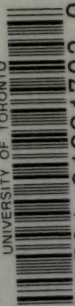


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FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE

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VOLUME III



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SESSION NINE

Room B.

Tuesday, August 26th, 9:00 A.M.

INSTRUCTION IN HYGIENE (Part One)

C. F. HODGE, Ph.D., *Chairman*

DR. F. C. BUSCH, Buffalo, N. Y., *Vice-Chairman*

Program of Session Nine

C. F. HODGE, Ph.D., Professor of Biology, Clark University, Worcester, Mass. "Learning Disease Prevention in School. The House Fly a Practical Lesson."

FRANCIS M. WALTERS, A.M., Professor of Physiology and Hygiene, State Normal School, Warrensburg, Mo. "Hygiene Instruction in Normal Schools."

GEORGE H. SHAW, C.E., Sanitary Engineer, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C. "Things Which the Public Should Know Concerning Sanitary Conditions in Interstate Meat Packing Establishments."

ROBERT N. WILLSON, M.D., Secretary American Federation for Sex Hygiene, Philadelphia, Pa. "An Outline Program for the Teaching of Sex Hygiene in the Schools."

ERNEST KELLY, In Charge of Market Milk Investigations, Dairy Division, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C. "Instruction in the Schools Concerning Sanitary Milk."

WILLIAM J. TRACEY, M.D., Health Officer, Norwalk, Conn. "Preventive Medicine Should be Taught in Our Schools."

E. G. ROUTZAHN, Department of Surveys and Exhibits, Russell Sage Foundation, New York. "The Use of Graphic Material for the Instruction of School Children in Special Phases of Hygiene."

C.-E. A. WINSLOW, M.S., Curator of Public Health, American Museum of Natural History, New York. "Museum Coöperation in the Teaching of School Hygiene and Sanitation."

CHARLES F. POWLISON, General Secretary National Child Welfare Exhibition Committee, New York. "The Influence of Child Welfare Exhibits on the Health of School Children."

DR. EUGEN BORCHARDT, School Physician, Charlottenburg, Germany. "Hilfsschulwesen und Heilerziehungsanstalten für psychopathische."

LEARNING DISEASE PREVENTION IN SCHOOL—THE HOUSE FLY AS A PRACTICAL LESSON

BY

C. F. HODGE

One sharp, vital lesson may leaven the whole lump of a child's life. It may work its way into the home and transform its attitude toward life problems, and then continue to "work" like yeast or leaven in the life of the community and the world.

The modern problem of health conservation and disease prevention is based on really simple grounds of common-sense cleanliness. Avoidance of contact with filth infections and effective protection of food and drink from such contacts is almost the whole solution, and keeping the air pure by preventing infective matters from becoming dry and being taken up as dust is practically the remaining factor. Bites of mosquitoes, fleas, stable flies and rabid animals may be easily taught, when of local importance in the spread of disease, but need not be considered in this brief discussion.

Our main problem is that of preventing the contact of persons, foods and utensils with disease germs commonly found in waste matters or filth—the problem of really common-sense cleanliness. The fact that such matters as quarantine and isolation, disinfection and proper disposal of human and barnyard wastes are not well understood indicates that we need to vitalize ideas on these subjects. This is one of the fundamental needs of our home and community life.

At the time I was shocked and surprised to hear Dr. Charles Wardell Stiles in a public lecture say, "*We are the filthiest people on the face of the earth.*" Full and free confession is good for the soul, and, as I remember it, Stiles repeated the statement three times, with all the emphasis he could give it. I have been thinking of it ever since and wish every man, woman and school child might do likewise until we become the cleanliest people on the face of the earth.

As I thought, I remembered the smooth, clean streets of Berlin, Leipzig, Dresden, Munich, Vienna, Milan, Paris, and compared them with the filthy streets of our own cities, paved with cobbles and riprap, the work unscientific, haphazard, impossible to clean. But if you think that our streets and front yards are passably decent, how about many of the alleys and back yards? If you doubt Stiles' word, work through the back alleys of any American city—except Cleveland the present season. Here is where you will find the filth that goes half way toward

accounting for our summer filth-mortality statistics. If we go to our farm barn yards we shall find much that accounts for the other half. A Scotchman once told me that a farmer would be prosecuted for criminal waste in his country if he failed to keep his stables better than most of ours are kept. Another Scotchman happened to tell me that a relative of his, on buying a Wisconsin farm was obliged to haul out four hundred loads before he could begin to use the barn, and even then he was in danger of finding places in the stable yard where he was likely to get in over his rubber boots.

The case of the health on a farm of this type is reported in the Indiana State Board of Health Bulletin for July, 1910. In response to an emergency call for Flexner's antimeningitis serum Dr. Simons finds a seven months' baby suffering from severe enteritis, with the accompanying meningism. A family history chart on the wall shows that four other babies have died, all under two years of age. He remarks the condition of the barnyard, saying, "If this farmer had attempted so unthinkable a thing as transforming his premises into a fly hatchery for commercial purposes, he could not possibly have achieved a more brilliant success." With the death of this baby the parents have lost five out of six children, and even this may be but a small part of the whole story. The farmer may have been producing milk, or other dairy supplies, and for years have been scattering filth-fly funerals among the people of a nearby town or city.

Here, then, we have our vital lesson. Flies carry all manner of infections to which they have access straight from filth to food. While effecting direct-contact infection the work of flies resembles air-borne contagions, baffling, impossible to trace, prevent or control. As this fact is being recognized health authorities everywhere are saying "Free the air of these universal distributors of filth infections, in order that we may see to trace other channels by which diseases are spread." Hence fly extermination becomes the necessary first step in health conservation.

In order to be vital, the lessons must be real and to the point. After arousing general interest by telling the class what flies do: How in the Spanish war they wounded 20,738 of our soldiers and killed 1,580 with the germs of typhoid fever; how they kill 56,000 yearly with the germs of enteritis, dysentery, fly-time summer complaint, almost all infants under two years of age, using tactfully any local epidemics that may suggest a lesson, develop and raw out all the children, know and finally call for volunteers to go into the barnyards (or old straw stacks in case of the stable fly) and get specimens of eggs, maggots and puparia, and with the filth in which they are found, demonstrate the whole life history of the insect. One teacher who did this writes: "Last week I had

some maggots in horse manure. It was an unusual thing to do in school, but I wished to emphasize the idea of filth. I think it was successful, for the disgust was great when they actually saw that they change into flies. People are so irresponsible that they have to be shocked to awaken their fighting powers." (This can all be done in a cleanly and safe manner by putting the material into large fruit jars or wide mouthed bottles. If it is desired to keep them for several days to show actual development, they may require opening to give air once or twice daily, but they must be stoppered or closed tightly, as maggots are strong and can burrow or squeeze through minute cracks.) In concluding some of these experiments treat the material with a solution of iron sulphate—two pounds to the gallon—or with other substances recommended locally for killing the maggots about stables or out-houses.

Study with the class all the substances in which flies may breed: wet decaying matter, animal or vegetable, filth of stables, rotting lawn clippings, weeds or garbage, and work out practical methods for each home of dealing with all such substances to prevent flies from breeding in them. All such matters about the farm barnyard should be spread on the ground or plowed or harrowed into it daily. In this way, according to all recent investigations, from 50% to 70% of its fertilizer value can be saved to the soil, which is lost by filthy, antiquated methods of storing and rotting. Even in the town or city lot, by proper planning, large quantities of stable refuse can be dug into the ground about trees, shrubbery or grape vines, between rows of bush fruits, strawberries or corn, while these are being cultivated or cleared of weeds. When properly spread or stirred into the surface it will become too dry and the bacteria of the soil will disintegrate the material too rapidly for maggots to develop in it. Thus these lessons on the fly may not only influence the daily cleanliness of the homes but may effect the saving to garden and field of many millions of dollars worth of soil fertility now annually wasted.

The outcome of this work should be the steadfast determination of every member of the community that no pile of rotting filth shall be permitted to endanger the health or life of a baby

Many cities and towns have already done so, and all must, the sooner the better, pass ordinances and develop plans for removal of all fly-breeding filth at least once a week during warm weather. Here the school children aid greatly in spreading the knowledge and in developing sentiment in the homes, for careful observance of such regulations. Several cities print the fly lessons on leaflets and distribute freely to the children in order to give them something authoritative to carry into their homes. Dr. Jean Dawson's leaflet in Cleveland has probably,

more than any other one thing, influenced public sentiment to support the work in that city.

Ordinary house or typhoid flies have been reared from maggots found in the snuff of a druggist's counter. This means that as long as there are flies around, they will succeed in finding something in which to lay their eggs. We must, therefore, attack the problem from both sides. We need to work for clean cities, towns, farms, and homes for many other reasons. The flies indicate the lines on which the general cleaning up must be done and constitute the sharp point of the wedge which must start things moving.

If the rate at which flies multiply were taught clearly in every school to every boy and girl, the rest would be easy. A pair of flies may produce from 120 to 150 eggs at a laying and may live to lay at least six batches at intervals of eight to ten days. These eggs become adult flies in about ten days and are ready to lay the first batch of eggs when from ten to fourteen days old. If we start out with a pair of flies May 1st, how many will we have, if all were to live, by August 1st? (Allowing 150 eggs at a batch, six layings to a pair, and each pair beginning to lay when ten days old.) Have every pupil, old enough, figure this out independently and see how near right the following figures are:

May 1 we begin with.....	2 flies
June 1 we have.....	11,702 "
July 1 we have.....	6,484,702 "
Aug. 1 we have.....	5,746,670,500 "

(This last figure would mean about 143,675 bushels of flies. Any pupil who is fond of figures may continue the breeding through August and September. One who has done this, *World's Work*, May, 1912, gives us as the theoretical increase of a pair of flies in a season: as 1,096,181,249,310,720,000,000,000 flies.)

Very few flies live through the winter, in at least the larger part of the country, and if everyone realized how many might come from a single fertile fly, not one would live to lay her first batch of eggs in the spring. They emerge from winter quarters desperately hungry, and with modern outdoor traps set at this time over every garbage can and swill barrel, practical extermination would be complete by the first of June at latest.

This is not the place for details or information. Within the past two years plenty of outdoor fly traps have been designed and they are on the market, and in many places the pupils are making traps of their own in manual training departments. Box traps for stable windows catch flies literally by the bushel, and with no trouble and trifling expense, make it possible to completely rid dairies and farm yards by halting

the breeders before they can begin to lay. This is effective prevention, and here is the fallacy of those who would limit the work of prevention to cleaning up the filth in which flies breed. Which is easier and better, to kill a thousand maggots in a cart load of manure or let the fly walk into a trap before she begins to lay, and have her around for three months, busy carrying filth to food while she is producing the eggs?

The final lesson, which is well fitted for special emphasis in high school classes in biology, relates to the need of perfect civic coöperation. One ignorant or careless household can breed flies enough to vitiate the best efforts of the rest of the community. There must be no ignorant or careless people in such vital matters. After asking each member of the class to actually work out a plan which shall render all fly feeding or breeding impossible about his own home, go a step further and ask each one to sketch a plan which shall be good enough to be sure to enlist every family in the community. Discuss, compare and revise plans until one is agreed upon as good enough to submit to the community, then get it printed in full in the local paper. Many towns and cities have made and tried such plans and these are readily available in the literature. The one feature to be avoided is the offering of prizes or prices for the greatest number of flies killed during any season in which they may be bred. A fortune might be made raising flies at ten cents a quart. All honors or prizes should be given for the less rather than for the more, for complete flylessness of a home, block, or section of a city.

In case such work has been done effectively, study carefully the vital statistics of the city and try to estimate fairly how much sickness and how many lives have been saved by riddance from this plague.

Under plans suggested and now in the field, I have seen homes so free from flies that screen doors and windows were not needed and while I have yet to see an absolutely flyless city, I have spent the past week in a residence section of Cleveland and I did not see one single typhoid fly in or about the house the entire week.

There can be no doubt that these lessons are leavening and vitalizing the whole lump of our home, community and national life. With the progress of the past three years kept up and increased, as all good movements tend to do, we may hope to see a flyless country within the next ten years, and then we may be the cleanliest, healthiest and most completely civic, civilized and decent people on the face of the earth.

HYGIENE INSTRUCTION IN NORMAL SCHOOLS

BY

FRANCIS M. WALTERS

How shall the general problem of hygiene instruction be attacked? How is the knowledge of the care of the body to reach the child and, through the child, humanity at large? What are the strategic points in this great campaign of education? It is my belief that a most important line of attack is through the schools whose work is the preparation of teachers. Hygiene teaching in normal schools has two essential aims:

First. To teach the prospective teacher to control her own health.

Second. To confer the physical and mental equipment by which she is to conserve the physical welfare of her pupils.

These aims are more closely related than at first seems. That the teacher's health is a matter of serious concern is evidenced by the great number of break-downs, nervous and other kinds, among teachers. Nor can the health of the average teacher be maintained by the simple expedients of exercise, ventilation, regular habits, sufficient food of the right kind, and avoidance of the sources of contagion. For teachers, as for modern indoor workers generally, there must be evolved a *new hygiene*—one that takes into account *all* the harmful conditions to which one is subjected and *supplies suitable restoratives and counteractives*. The old system of hygiene now generally taught is good as far as it goes, but it does not cover the entire field of liabilities. A system of hygiene to serve the practical needs of the teacher must include much of our so-called preventive medicine and have the same sound basis of scientific fact as that which the physician finds effective in his work of preventing and curing disease. I would call your attention briefly to two points requiring special attention.

The first is the hygiene of the nervous system. The teacher's work requires that she be a good generator of nervous energy and have few nerve leaks, that is, avenues through which the nervous power is spent without accomplishing results. And of all the nerve leaks pertaining to the school room, overwork of the eyes is the most common and the one most difficult to control. Apparently no organ of the body is so liable to deformities of structure or irregularities of function as the eye. In my examinations of the eyes of members of my hygiene classes, and of other normal school students, during the past four years (the number of examinations being nearly 4,000), and in which I have used trial case

lenses and employed the fogging method of relaxing the eye muscles as described in Thorington's "Refraction and How to Refract," I have failed to find more than five per cent. whose eyes were in all respects normal. I do not interpret this to mean that ninety-five per cent. of my pupils should wear glasses, but it does mean that ninety-five per cent. are liable to serious nervous depletion through the eyes. There is in my opinion no question but that nervous breakdowns among teachers are in most cases traceable to eye strain. The following is by no means an isolated case. Miss C., aged 25, had been teaching or trying to teach for some years, but was very nervous and on two occasions had been compelled to give up her work from nervous breakdowns. Her vision was good and accordingly she had never suspected her eyes of giving trouble. The test in the hygiene class showed latent hyperopia of 2.50 D. Properly fitted glasses relieved her nervousness and have since protected her from breakdowns. Because of the important relation of the eye to nervous conservation and of nervous conservation to the general health of the teacher, there should be associated with every normal school, some one who is qualified to test the eyes and prescribe lenses when necessary. His interest in the students should be wholly professional.

In this connection I would call attention to the inadequacy, the almost worthlessness, of the simple eye tests based upon acuteness of vision. While the findings of such tests suggest the presence of apparent errors of refraction, they do not reveal the latent errors; they only hint of the abnormal working of the external eye muscles, and they furnish no indication whatever of the presence or absence of eye strain. Eye strain, the arch enemy of the nervous system, has little or no relation to acuteness of vision and is just as likely to be associated with eyes that see well as with those that see poorly. The real tests for eye strain are the physiological or functional tests: Do the eyes hurt from close work? Is there frequent headache? Is there nervousness, and is there insomnia after late study? Are there irritations of the lids, watering of the eyes, or frequent styes? Affirmative answers to only two or three of these questions usually means eye strain. Only when the physiological indications of eye strain have been taken into account and the degree of myopia, hyperopia, astigmatism, and muscle imbalance carefully measured do we have data upon which to determine how the eyes should be used and what and how much help they need in the way of properly fitted lenses.

The second point which should be specially stressed relates to those conditions upon which depend effective elimination. A teacher whose blood is highly charged with waste will do poor work, no matter what her scholastic preparation may be and, on account of its interference

with elimination and its wide prevalence, constipation must be set down as a chief cause of inefficiency in the school room. Hence along with the knowledge of the natural methods of keeping up the activity of the bowels, there should be taught a proper use of mild laxatives. Ignorance, prudery, and prejudice must be swept aside and the idea established that continued good health and efficient work are directly dependent on a free movement of the bowels each day. On the one hand, warning must be given against the drugs that gripe and purge and, on the other hand, it must be clearly shown that the harmful effects of mild laxatives are infinitely less than the evils that result when constipation is permitted to continue. But with the knowledge of remedies that serve temporary purposes must be instilled the idea that through exercise, proper diet, a right use of water, observation of regular habits, and the conservation of nervous energy, the natural action of the bowels can be maintained or restored, if for the time being it has been lost.

Among normal students, there is a vast amount of corrective work and also a very large number of personal problems which can, with proper instruction, be solved by the students themselves. The large number of physically defective people who attend normal schools is due in part to the fact that the great army of teachers are women; in part to the general prevalence of the idea that those who are not strong enough for other vocations, are still strong enough to teach; and in part to the effects of school room work upon those who do more or less teaching before the completion of the normal course. While much of the corrective work should be done by the combined efforts of the hygiene and athletic departments and many of the health problems solved through coöperation with the physician, it devolves upon the hygiene teacher to discover the cases needing assistance and to supply the stimulus which causes relief to be sought. And it is fortunate, I believe, for the hygiene department that such is the case. It is a means of arousing individual interest and of generating enthusiasm. In my own work, an earnest effort is made as soon as the class is organized to determine the physical condition and health liability of each student. Our tests include measurements of breathing capacity, blood pressure, body symmetry, muscular power, eye defects and hearing; examinations of nose, throat, heart, and lungs; and the answering of the usual questions relating to the efficiency of the vital organs and to personal habits. The results of these tests and examinations are gone over with the students individually; the presence of such health problems as have been revealed are brought to their attention; and means suggested for their solution. These records, moreover, are filed for future reference and with the understanding that the student is to correct the correctible difficulties. The improvements resulting from the personal applica-

tion of hygienic principles are of interest to the class as a whole as well as to the individual pupil. The following data is from the records of our 12 weeks summer school class just closed. Number in class, 63. Number able to improve breathing capacity 46, number lowering blood pressure, 42; number improved in muscular energy, 40; number increasing in weight where such increase was desirable, 13; number reducing weight where such reduction was desirable, 5; number improving eliminative processes, especially in the matter of constipation, 25.

In the actual work of teaching, I believe the most important problem to be the development of an adequate theory of health control and the means by which this is adapted to the individual. It is a novel idea to many of my pupils that their health is a condition subject to control. With them, as with the majority of mankind, health appears to be a matter of heredity, of luck, or the working of Providence—something with which they have little to do. They admit, of course, that careful living makes some difference, but the idea must be developed that the control over the physical well being may be as definite as that of a sea captain over his vessel, of the gardener over the growth of his plants, or of the chemist over some process in the laboratory. There is no need of haste, however, for our essential purpose is to teach the principles of control—control through exercise, through correct posture, through agencies affecting elimination, through nervous conservation, through safeguards against germs, and through social adjustments. With knowledge of the methods of control comes faith and with success in working out individual health problems, there comes the desire for the fuller knowledge which makes possible a larger control.

As the prospective teachers realize the intensely practical nature of the hygiene course which I have attempted to outline, there is no lack of interest and no failure on their part to appreciate its merits. In no subject which I have ever taught have there been such expressions of appreciation as in our advanced classes in hygiene. As to the advisability of such work in normal schools there can be no question.

Vastly more important, however, than the health of the teacher, is the conferring of the mental and physical equipment through which she is to conserve the physical well being of her pupils. No longer is the bulk of our school children from the hearty American pioneer class but from the indoor dwellers of cities and villages. Good physical development cannot now, if ever, be taken for granted, but the school is called upon to supply the deficiencies both of heredity and of environment. This demand can only be supplied through properly equipped teachers and these the normal schools are morally bound to provide.

Fortunately our second general object relates itself closely to the first. Effective work in safeguarding the teacher's health goes far

toward supplying the attitude of mind and the fund of practical information which the teacher must have. As the teacher succeeds in matters of personal hygiene, she is naturally inclined toward the application of health principles to her pupils. To the extent that she becomes convinced through her own experiences and study, that health is a condition subject to control, she becomes enthusiastic in communicating the principles of control to others. And to the degree that she succeeds in establishing hygienic habits in her own life, does she become earnest in the formation of hygienic habits on the part of her pupils. There are, however, points upon which special instruction must be given.

There must be special instruction along the line of detecting bodily defects—those of sight and hearing, impediments in the air passages, drains upon the nervous energy, deformities of the skeleton, etc., and there must be some development of the methods of securing the interest and coöperation of parents, especially in cases requiring medical aid.

Special instruction is also necessary along the line of detecting contagious diseases in their early stages, the referring of suspects to the proper authorities, and of readmitting children who have been out of school because of infectious diseases.

Another topic of special interest is that of securing a healthful school room environment. Several hours may well be spent upon the consideration of proper and efficient methods of ventilation, proper lighting of the school room, the value of hygienic school room furniture, the importance of order and system in the nervous conservation of the pupils, the necessity for sanitary toilet arrangements, and the means of securing efficient janitor service.

Upon the value of play and methods of making play contribute to body building and character building as well, the prospective teachers need instruction and something more—such a zest for play that getting out and playing with children is no hardship, but a pleasure.

There should be special instruction upon that most difficult subject, sex hygiene. While it is important that young people be informed upon the processes of reproduction—that the young man and young woman be given this knowledge in a pure minded way and with an adequate basis of fact—the more essential condition is that the general conduct of the developing boys and girls be so guided that they do not awaken in each other unwholesome thoughts and feelings as they pertain to sex. The growing boy must be taught to respect and reverence girlhood and womanhood and to entertain only pure thoughts toward his girl acquaintances. And both sexes must be taught the dangers of familiarity in their relations and to abhor vulgarity in all forms. This suggests a question in the general method of hygiene teaching in normal schools which is worthy of some consideration.

Should young men and women be taught separately in the hygiene classes? Most of my work has been done with mixed classes, though I have had some experience with classes in which the sexes were segregated. It is my opinion that with advanced students—juniors, seniors, and post-graduates—there is nothing to be gained by segregation. It is easy in these classes to obtain the same attitude of mind as that manifested by young men and women working side by side in medical schools. Reverence for truth and the serious nature of some of the things that are not freely discussed between men and women, makes the atmosphere of the class room most wholesome. There is, furthermore, this advantage: in public school teaching it is frequently necessary for women teachers to discuss with male principals questions upon which prevailing prudery demands silence, but which offer no difficulties to those who have discussed these and similar questions in the class room.

When we consider the great importance of the teacher's health and the greater importance of the mental and physical equipment by which the teacher is to conserve the health of her pupils, what shall we say of the responsibility which rests upon the schools whose work is specifically that of preparing teachers? We have met here in a great world's congress to devise ways and means for the conservation of the physical welfare of man. We must agree that the schools for the preparation of teachers afford an important vantage ground for the attack of this general problem; for through the teacher is reached the child and through the child, humanity as a whole. Whatever can be done to awaken normal schools, and whatever can be done to aid them in carrying out this great work, will go far toward solving all the problems relating to the public health.

DISCUSSION OF

F. M. WALTERS' PAPER

BY

THERON C. STEARNS, M.D.

In seeking to develop efficiency in teachers and students the subject of alimentation in its modern aspects is not given the attention it deserves. At present we are in the position of one who would deposit money in a bank and keep no account of either deposits or withdrawals.

Improper alimentation leads to defective nutrition, this to deranged activity of the physiological processes upon which resistance to disease depends, while the question of daily efficiency is continually below the figure to which intelligent alimentation would bring it.

DISCUSSION OF

PAPERS OF C. F. HODGE AND F. M. WALTERS

BY

R. RALPH FERGUSON, M.D.

We who live in the larger cities of the country, as in New York, Chicago, Boston, Philadelphia, etc., and who see the terrible loss of infant life in the congested districts, where one out of every five babies under two years of age, dies from gastro-enteritis, often forget the great loss of life in the rural districts from this same cause.

Mr. Hodge's paper brought this fact out most forcibly in citing the loss of five out of six children in a farmer's family presumably from gastro-enteritis, or fly poisoning, as he has designated it. That we are all living under the same unhygienic conditions, for the proper safeguarding of our children is an absolute fact, whether it be in a city or in a rural district. The great cry for pure milk is bringing forth much fruit, but how many of us realize that about three-fourths of our cases of gastro-enteritis in children are caused by improper feeding, rather than from bad milk. Mothers never seem to learn how to feed their babies, and I dare say that not one child out of a hundred reaches its second year birthday without having an attack of gastro-enteritis at some time or another from improper feeding. Instruction and education of mothers and future mothers will do much to wipe out this awful scourge of infant mortality all over our country.

Prof. Walters' paper points out the defects in vision of many of his Normal School pupils with a corresponding waste of nervous force and its deleterious effects upon the children who may come under their later care. Prof. Fuchs, perhaps the greatest eye specialist the world has yet seen, once said, "That if a piece of machinery were turned out of the factory as defective as the human eye it would be sent back for repairs at once." We are all defective in some way, and so in correcting our own defects we lay the foundation for a better hygienic condition for the future generations of children.

Constipation is a great nation-wide complaint, especially among women; the accompanying auto-intoxication uses up their nervous force, and their physical stamina; causes headaches and in general unfits them for the proper care of their children. This condition does not come on in a day but is the result of neglect on the part of mothers from their earliest childhood. This should be corrected before it ever begins; teach your children early, and watch them constantly while under your control, that the sewerage disposal of the body is a most important lesson for them to learn.

THINGS WHICH THE PUBLIC SHOULD KNOW CONCERNING SANITARY CONDITIONS IN INTERSTATE MEAT PACKING ESTABLISHMENTS

BY

GEORGE H. SHAW

The means taken to safeguard and supervise the meat supply of a country is of vital interest to each inhabitant, for the general health of a community is dependent to a large extent upon the wholesomeness of its food supply. It is important, therefore, that everyone interested in the public welfare should be well informed regarding the nature and extent of the supervision exercised by the Federal Government over the meat supply of this country. The purpose of this paper is to outline briefly the sanitary conditions in federally inspected establishments, the advances made in recent years under the supervision of the Bureau of Animal Industry, and to point out the need of supplementing Federal inspection by efficient State and municipal inspection.

All interstate meat packing establishments in the United States are under the supervision of the Meat Inspection Division of the Bureau of Animal Industry, which forms a part of the United States Department of Agriculture, and this paper relates particularly to those packing houses which are subject to this supervision by virtue of their interstate or export business. The Federal Government has no jurisdiction over establishments which do only an intrastate business, the supervision of such establishments coming under the jurisdiction of State and municipal authorities.

The first important impetus given to the improvement of sanitary conditions in establishments where meat and meat food products are prepared resulted from the report made to President Roosevelt by Mr. James B. Reynolds and Mr. Charles P. Neill, in 1906. They were appointed by the President to investigate conditions in the large packing houses, and their findings resulted in severe criticism of the sanitary conditions existing at that time. The meat inspection law of 1906 followed this report and greatly increased the scope of Government supervision. It provided for sanitary inspection of each establishment, inspection of processes employed in the establishment, of meat food products in various stages of manufacture, and of finished product. It also authorized the supervision of interstate shipments of meat and meat food products. These features were not covered by the former law.

The section of the law of 1906 relating to sanitary inspection is as follows:

"The Secretary of Agriculture shall cause to be made by experts in sanitation or by other competent inspectors such inspection of all slaughtering, meat canning, salting, packing, rendering, or similar establishments in which cattle, sheep, swine, and goats are slaughtered and the meat and meat food products thereof are prepared for interstate or foreign commerce as may be necessary to inform himself concerning the sanitary conditions of the same and to prescribe the rules and regulations of sanitation under which such establishments shall be maintained, and where the sanitary conditions of any establishment are such that the meat or meat food products are rendered unclean, unsound, unhealthful, unwholesome, or otherwise unfit for human food, he shall refuse to allow said meat or meat food products to be labeled, marked, stamped, or tagged as 'Inspected and Passed.'"

The regulations prescribed by the Secretary of Agriculture in accordance with this enactment govern the operations in all establishments under Federal inspection.

Organization. At the present time there are about 800 establishments in 226 cities and towns in this country under Federal meat inspection, and to carry out the work about 2,400 veterinary inspectors, meat inspectors, and assistants are employed, requiring an annual appropriation of over \$3,000,000.

The work in the various large packing centers is under the supervision of a local inspector in charge, who reports to the Chief of the Bureau of Animal Industry at Washington. To further the uniformity of Federal supervision there are a number of traveling inspectors who visit and inspect the various establishments. Traveling inspections are also made by the Architect and the Sanitary Engineer of the Bureau.

The sanitary condition of each department in an establishment is reported weekly by the under inspectors to the local inspector in charge, who transmits a monthly sanitary report to headquarters at Washington.

The work to insure satisfactory sanitary conditions in the interstate meat packing establishments may be subdivided into inspection and supervision of *First*, the water supply; *Second*, construction of buildings; *Third*, drainage and sewage disposal; *Fourth*, light and ventilation, and *Fifth*, equipment.

Water Supply. One of the prime requisites and perhaps the basis of good sanitary conditions is an ample supply of pure and wholesome water. The public is sufficiently aware of the many epidemics of typhoid fever caused by polluted water supplies, to realize the importance of pure water.

In the East the problem of getting good water is less acute, for the municipalities as a rule have taken means to get a pure supply, but

in some parts of the country polluted water taken untreated from a river is often the only municipal supply available.

At Washington extensive laboratories are maintained where, among other work, systematic chemical and bacteriological examination of the water supply of all the inspected meat packing establishments is made. It has often been necessary to condemn unsatisfactory supplies and forbid the use of water from them. In many cases the large packing houses have sunk "driven" or "artesian" wells which, as a rule, furnish a satisfactory supply.

The Federal regulations require that the water supply shall be ample, clean, and potable, with adequate facilities for its distribution through the plant; and they stipulate that the source of water supply and the character of reservoir or storage tanks at each establishment must be known to the inspector in charge.

Construction of Buildings. Packing houses were formerly constructed mostly of wood, but the large amount of water used about such a plant makes the deterioration of wood very rapid. The heavy trucking over the floors also imposes severe conditions, so the tendency has been to avoid wood for building material as much as possible.

Since the meat inspection law of 1906 has been in effect substantial advances have been made in packing house construction, and buildings of reinforced concrete and mill construction, well lighted and ventilated, are replacing the old less enduring buildings. This type of construction must undoubtedly be cheaper in the end and lends itself much more readily to being kept in a clean and sanitary condition. Since the passage of the new law no less than 145 of the 800 packing houses now under inspection have been newly constructed, and over 80 per cent. of these are of the mill or slow-burning type or of concrete and metal.

Probably in no other type of industrial building do floors receive such a severe test as in a modern packing house, and therefore in such buildings satisfactory floors are of great importance. This is particularly true of floors in cattle and hog killing departments where wood was formerly much used but has been quite generally superseded by brick and asphalt.

The most important factors that make for a good packing house floor are strength, elasticity, water-tightness, durability, good wearing surface, and ease of repair. A reinforced concrete floor is satisfactory structurally, but the cement surface is readily attacked by grease; it is also not sufficiently elastic, and is difficult to repair. These deficiencies are overcome by providing a wearing surface of vitrified brick or asphalt over the concrete. Floors of smooth stone slabs have been

used for slaughter houses and when well constructed are very satisfactory and easily cleaned.

Walls and ceilings in inspected establishments are required to be kept well painted. It was found that whitewash and cold-water paints soon peeled off and the surfaces became insanitary, so their use is now discouraged.

One of the criticisms of sanitary conditions at the time of the Reynolds-Neill investigation in 1906 concerned the inadequate provisions for toilet and dressing rooms. At the present time these facilities are well provided for, and in many of the large plants a whole building with all modern conveniences including shower baths is devoted to the uses of the employees. The establishment is required to furnish adequate dressing rooms, toilet rooms and urinals. Modern lavatory accommodations, including hot and cold water, soap and towels, must be placed in or near the toilet and urinal room and at such other places as may be required. Toilets must have outside ventilation and are usually separated from the rest of the establishment by a vestibule.

Drainage and Sewage Disposal. Before interstate packing houses came under the supervision of the Federal Government little attention was paid to securing efficient drainage, the prevailing idea being to remove wastes with as little expense and trouble as possible. At the present time plans of all new buildings must be submitted to Washington and the drainage facilities approved. The "interrupted system" of drainage, formerly much used in packing houses, in which waste liquids from floors above could overflow the floors below, is now being rapidly superseded by continuous vertical drain pipes from the top floor to the sewer with each separate story connected through a trapped pipe. These traps are usually of the S or P type. The use of the bell trap is discouraged, as it is found that the bell is often broken or removed and the efficiency of the trap destroyed.

Sewage from packing houses is difficult to dispose of satisfactorily unless there is sufficient water available for proper dilution. The Sanitary District of the City of Chicago is now making special studies to render such sewage as innocuous as possible when discharged into Bubbly Creek.

New York City requires that no blood be discharged into the harbor waters, and precautions are taken at the abattoirs in the city to prevent this and to reduce the objectionable features of a packing house as much as possible.

Light and Ventilation. The examination of carcasses made by the veterinary inspectors of the Bureau requires that there be good light, and as a rule the killing floors of the abattoirs are well lighted and venti-

lated by windows and skylights in the roof, with specially constructed and well lighted rooms for final examination of retained carcasses.

At one time it was thought desirable to exclude natural light from refrigerating and meat-curing rooms, but the tendency in the newer plants is to provide good natural light in these departments also. Whenever it is necessary to use artificial light, the Government requires that it be sufficient to enable all operations in the room to be closely supervised and inspected.

The lighting problem is often complicated by the presence of large quantities of steam in some of the rooms. The regulations specify that "the rooms in which inspection is carried on shall, by heating or other means, be kept reasonably free from steam and other vapors, in order that proper inspection can be made." In enforcing this regulation it has been found that the formation of steam may, in a large measure, be prevented by warming the air in the room during winter, thus preventing condensation, and in other cases by installing ventilating fans.

Satisfactory ventilation is required in all establishments, especially in rooms occupied by many workmen, and former unsatisfactory conditions have been greatly improved by installing modern systems of heating and ventilating.

Equipment. A fundamental requirement for sanitary equipment is to provide apparatus that is capable of being readily cleaned. Wood tables containing cracks are difficult to keep clean and are often unsanitary, and it is now required that sausage tables, if of wood, shall be made of movable boards so that all crevices can be kept clean. Satisfactory tables for this purpose are also made of glazed tile and boiler iron. It is necessary, however, to keep the latter well lubricated when not in use to prevent the formation of rust. Bins and racks for storing and hanging meats must also be removable and capable of being easily cleaned.

Methods of handling the viscera of animals have been greatly improved in recent years, a great step forward being the introduction of a sanitary truck to catch the cattle paunches as they are removed from the carcass. Before their introduction the viscera were dragged over the floor to a chute and dropped below. The use of the truck removes all chance of floor contamination and insures sanitary handling of the product.

In this connection an improved method of cleaning the inside of cattle paunches should be mentioned. The cattle paunch, when prepared for a food product, is known as tripe. The paunch contains the food of the animal when first eaten and before being regurgitated. It is often difficult to get the inner membrane of the paunch thoroughly

clean, and formerly after being opened it was imperfectly washed in a tank containing water dirty from the contents of paunches previously washed. The apparatus now widely used consists of a metal upright having a revolving top, shaped like an umbrella. The paunch is thrown over this, a volume of water played over it, and the paunch thoroughly washed with a hand brush.

These last two examples are typical of many other improvements that have been made in the equipment of meat-packing establishments, which insure the clean and sanitary handling of meat food products from the time of slaughter until they leave the establishment.

Among other means taken to better sanitary conditions should be mentioned the screening of windows in summer and the use of fly traps to catch those that get into the establishment. The danger of spreading disease through the agency of flies is well recognized, and every effort is made to exclude them as far as possible from packing houses.

The Bureau of Animal Industry also requires that the outer clothing of the workmen shall be of a material readily cleaned, and that only clean garments shall be worn. This requirement is met in the case of most of the larger establishments by a well-equipped laundry devoted wholly to keeping the coats and aprons of the workmen in a cleanly condition.

Need of Efficient State and Municipal Inspection. In the work for good sanitary conditions throughout the country it is essential that not only the establishments that come under the supervision of the Federal meat inspection law, be kept up to a proper standard but that every establishment, however small, where slaughtering and meat packing is conducted should also be kept in good sanitary condition.

This phase of the subject has been touched on before in publications issued by the Bureau of Animal Industry, but it should be further emphasized. It is estimated by the Bureau that 60 per cent. of the country's meat supply is federally inspected. Most of the remainder is without any form of inspection, while a portion receives a more or less efficient local inspection. As previously stated, this 40 per cent. slaughtered without Federal Government inspection cannot be included because the supervision of the United States Government is limited to establishments that do an interstate or export business.

The result of this limited responsibility has been that animals have have been slaughtered and sold for food in establishments doing an interstate business which would have been condemned and converted into inedible products had they been slaughtered in federally inspected establishments. Sanitary conditions in such establishments are often very bad, the slaughtering being done under filthy conditions in dark and poorly constructed buildings and sheds.

The remedy for this state of affairs is efficient state and municipal inspection. Many cities have realized this need and have required that slaughtering be done under good sanitary conditions and with efficient veterinary inspection. The number of such cases, however, is small, and this improvement of conditions should be greatly extended.

The writer recently visited Paris, Texas, a city of about 15,000 inhabitants, which was one of the first to build a municipal abattoir and operate it successfully. The operation of this plant is based on the regulations governing Federal meat inspection. Every animal killed is inspected by a competent veterinarian, and good general sanitary conditions are maintained. The citizens of this community, as a result of the \$10,000 spent for this abattoir, were enabled to rid the city of the nuisance caused by several small slaughter houses located in the vicinity; to provide themselves with inspected meats slaughtered under sanitary conditions at less cost than was possible by local butchers; and in addition to these advantages, to turn back a profit during 1912 of about \$4,000.

Besides these considerations in favor of a well-conducted municipal abattoir there should be mentioned the economic gain resulting in slaughtering animals near the point where they originate, rather than shipping them alive to some distant packing house center, and then, after slaughtering, shipping the dressed meat back to the starting point.

The improvement in sanitary conditions in interstate meat packing establishments has been a gradual evolution from the conditions that obtained prior to 1906. A large number of old, inadequate buildings have been replaced with well-planned modern structures; methods of handling meats improved, and sanitary equipment substituted for old unsatisfactory apparatus. These improvements demonstrate the beneficial results obtained by the uniform and efficient enforcement of the meat inspection law.

The desire to have the meat supply thoroughly safeguarded by the local government, as well as by the Federal Government, is becoming widespread, and the importance of bettering conditions should be fully realized at this time when the movement for a pure milk supply, a pure water supply, and good sanitary conditions in bakeries and restaurants is occupying the public eye.

Sanitary conditions in establishments throughout the country should conform to a standard which the development of sanitary science has shown to be desirable, regardless of whether they come under Federal or local supervision, and it should be the duty of every good citizen to urge that unsatisfactory local conditions be corrected and that all meats be properly inspected and prepared under sanitary conditions.

AN OUTLINE PROGRAM FOR THE TEACHING OF SEX HYGIENE IN THE SCHOOLS

BY

ROBERT N. WILLSON

It is my object within very compact space to demonstrate a tentative scheme for the teaching of sex hygiene in the schools. I trust it will appeal not only to the fancy, as desirable (if not ideal), but far more to the executive common sense of those who have it in their power to see that the necessary steps are taken to introduce some form of teaching in the schools. It seems a far cry to those of us who were at work in this field twenty years ago to the eager demand for sex instruction and sex knowledge that is heard to-day on every hand from the parents of children. A long hard road has been travelled, the first portion very steep and hazardous, the latter part so easy as almost to appear treacherous. It is, therefore, as strange as it is amusing to witness a number of newcomers in the territory, albeit in certain instances men who have won their teaching spurs in other phases of pedagogy, venturing to exclaim against the matter and method suggested on the basis of years of experience, and above all to criticise the name "sex hygiene." One of these prominent critics, always unique, if not always precise in the logic of his arguments, asserts boldly enough that he has "everywhere found thoughtful people much aroused upon this subject usually in its misstated form of 'Sex Hygiene'." And again, "In fact, this subject has nothing to do with hygiene. I say this as one whose chief work in life is to promote hygiene."*

Another, a teacher of teachers, tells us that the term sex hygiene is "altogether too limited as a general designation for the desirable instruction concerning sex and reproduction." In his turn he suggests "sex education" or "sex instruction." He fails to observe that either of these is so much narrower than the term sex hygiene as to include only one of its departments.†

I wish at the outset, to pause long enough to say that of all the characterizations suggested for the general subject of sex health, and sex knowledge, and sex instruction, the most comprehensive, the most apt appears to me to be sex hygiene. He who ventures to tell the public that the movement to instruct the present and future fathers and mothers and teachers of children in all they should know regarding

*R. C. Cabot, *American Youth*, April, 1913.

†Bigelow, *Religious Education*, April, 1913.

sex nature, about the object, sacredness, and care of their sex organs, and concerning the part their health or unhealth plays in heredity—he I repeat, who presumes to say that these vital subjects fall outside the boundaries of sex health and sex hygiene, simply does not understand the use or the meaning of the word hygiene. Hygiene as used to-day means the science of the preservation of health, mainly by prevention, in a measure by remedial means. Sex hygiene means the science of the preservation of the sex or reproductive talents and organs mainly by prevention, in a limited measure by cure. Sex hygiene is from start to finish a sanitary movement, dealing with the development and maintenance of moral and physical health. Sex hygiene deals with the sex health of the present, in order that it may insure the sex integrity and through it the general health of the future. Sex hygiene is the main safeguard of heredity, in that it looks primarily to the integrity of the parent through the rational means of a full knowledge of the object, the proper employment, and the conscientious preservation of the sex nature of the individual for the sake of the child of the future. From first to last the field that has been denominated sex hygiene is a sphere of activity, the sole and only reason for the cultivation of which is the sum of the health of the children, which constitutes the public health. Therefore, and with good reason, I think, is this eager struggle for the sex health and through it every other department of the health of our children and of their children, termed sex hygiene. The word has come to stay, and there could be none more appropriate.

The Teaching of Sex Hygiene. The whole subject must be divided at once into the teaching of adults, and the teaching of children. In a certain sense all of us are beginners at this stage. All are groping their way toward a satisfactory grasping and presentation of the material, and toward the furnishing of a properly equipped body of teachers. But, apart from this fact, we realize that many if not most adults must unlearn that which they think they know and begin again as children. We therefore divide the work at the outset into instruction:

1. Of the adult.
2. Of the adolescent.
3. Of the child.

The *first* division is the one of immediate importance to present needs. We have few or no qualified teachers. These must necessarily come from the adult class.

The *second* is the division of consequence to the crowding future. In the case of the adolescent it may not yet be too late to accomplish good for his own health and that of his children.

The *third* comprises the great field of promise for the ultimate future. It furnishes the only truly encouraging beacon, heralding an oncoming day of genuine public health. It centers in and around the sane and simple instruction of the child in normal sex hygiene and in all the sociologic outgrowths of that science.

Main Lessons. There are three basal principles upon which all effective instruction in sex hygiene will rest:

1. The absolute dependence of future health upon present health and hygiene, especially upon sex hygiene in its bearing upon heredity.
2. The responsibility of the individual for his or her influence upon the public health of the future.
3. The possibility of correcting and even of eradicating a certain measure of the unhealth and unhygiene of the past by the sex hygiene of the present and future.

Based upon the foregoing principles even human eugenics acquires a significance that has in it something real, rather than of fancy. A prominent western educator has recently (according to the daily journals) demanded the return of the "old, unintelligent love marriage." As though there could not be just as rationally and just as naturally a love marriage, old fashioned as we would have it, but backed and preceded by intelligent knowledge on the part of the marrying individuals, the one of the other! Such a knowledge will preclude the blind love that ends in disaster. Neither man nor woman will love that which is unhealthy or unclean, provided they know before he or she loves! Love has been blind, and therefore very often unhappy! Educate the woman and the child, and love will be wide awake in one respect at least, namely, in assuring itself that it is not choosing to marry transmissible vicious tendencies or disease itself!

The Order of Progression. There must be a distinct and definite method and order in the march toward the education of the present and future public in sex hygiene if results are to be speedily attained.

First, it has already become very apparent that it is necessary to hold back and restrain the overenthusiastic (usually the untrained), the improvident, the injudicious, the ignorant, and those of shallow interest whose ardor is soon to be throttled by the thorns of difficulty and impatience.

Second, I have already mentioned the direful lack of trained and naturally fitted teachers of sex hygiene. There must straightway be reared (because they cannot be manufactured) a body of men and women, essentially lovers of children, deliberately trained for the work, and

ready to sacrifice much for the good they will accomplish. They should be primarily and some day will be fathers and mothers, and the teaching will then be done mainly in the home. To-day the fathers and mothers appear to be of all the most unwilling, and therefore the least qualified to teach. Therefore, for a time at least, the teaching which the parents refuse to and cannot do must be supplied by the already overburdened schools, and it is with respect to this latter phase of sex hygiene instruction, namely, that in the schools, that I wish to venture a few suggestions by way of stimulating thought and discussion.

Sex Hygiene Teaching in the Schools. In the use of the word schools let us not limit our reference to the public school system. A vast number of children leave the public schools for work at fourteen years or thereabouts, and see no more of its benefits. Many children of the more affluent classes enjoy only private and boarding school experience, the latter of which I consider very often a curse. Both classes come in touch at some time with the Sunday School. All three, public, private, and Sunday School (Sunday or week day classes) offer opportunities of reaching the child from some vantage ground, and all three should be employed to their full limit of effectiveness and peculiar advantage. Here at once becomes pressing the lack of suitable teachers, and here again we cry "Oh for the home and the parent!" It is only the rare public or private school teacher that can instruct and love a child at the same time, and the combination appears to be absolutely necessary!

The Teaching of Little Children. I venture to repeat my belief that the teaching of sex hygiene to children, little or grown, must be through and by means of a union and amalgamation of knowledge, personal magnetism, and love, or there had better be no teaching. Next I am impelled to say that which would seem axiomatic, to wit, only normal sex hygiene should be taught to children. One of the main stumbling blocks in the way of a ready acknowledgment of the need for teaching on the part of parents and pedagogues is the misconception that those who are most earnest and have studied the subject longest and most thoroughly have desired or planned any other arrangement.

If tactful teaching is to be begun in the home, it can best be started in answer to the first abrupt question of the little toddler, boy or girl, as to the origin of his or her own, or a new baby's existence, or as to that of the pet kitten or puppy newly arrived upon the scene. At a very early age flower teaching can be begun.

To my mind there are three very simple, all important lessons for the child to see, and through seeing to learn. First, the absolute dependence of the offspring for its own possessions upon the nature and character of the parent.

Second, the never ending responsibility of the male and female for the reproduced type and qualities—*always reproduced*—in the progeny.

And, third, the thought easily instilled from very young childhood, that far in the distance, may be, but somewhere ahead is the possibility of fatherhood or motherhood as the real incentive for a hygiene and health to be maintained in the embryo parent of to-day. There must be no teaching as such! At least the child must recognize no word or move of the parent or teacher-friend as deliberate instruction. The relation of teacher and taught is incompatible with true comradeship.

The love of a doll or of a pet animal will very early show the parental instinct maturing in the very young. It requires, as a rule, little encouragement and direction to lead the child to understand how important its example and influence are to the foreglimpse of the boy and girl of a future home. Outdoors and indoors, there are opportunities furnished the observant parent that should be seized upon and put to good use in opening the eyes of the young child to a knowledge of the development of nature. It may be that very early the question will be put in its totality, "Mother, where did I come from?" Very short-sighted, and very, very timorous is the mother, who fails to win to herself through the beauty of the true story the boy or girl snuggling in confidence against her bosom. Her reply cements finally either the comradeship or the distrust that is to exist and persist between the child and her. Up to this point, the child is, of course, doubly fortunate that has the advantage of the sunshine and the fields, and the love, and the personal touch, and the brooding concern of the mother, for his early schoolroom, and curriculum, and teacher.

Teaching the School Child. During eight or ten or twelve years of their lives the boy and girl are in school. Six or four or two precious years are all that are furnished to some by our manner of present day living. Many of the children come from surroundings and examples of domestic unhygiene that must be very tactfully untaught and unlearned daily, at the same time that their influence is being replaced and counteracted by the right thoughts and accurate bits of scientific interest that help in fastening and driving home the facts of sex hygiene.

At the eighth year, children of both sexes can be and are being taught the science of reproduction in flowers, and insects, and birds, and fishes, and the lower animals. Not a lesson is assigned other than those which go in through the eyes, with only an occasional suggestion through the ears. Again no thought of a teacher, or of being taught! No knowledge that any studying is being done! And by and by a verbal review of the ground covered by the tiny naturalist student of sex hygiene! The main thing learned at this age is a hint at the influence

of the male and female in heredity; the responsibility of the parent, if a weak, unhealthy offspring is born.

At eleven or twelve years, the boy and girl are at the threshold of puberty. In the last three years bit by bit has been added to the eight-year-old beginning. Many of the sex habits of the plants and animals are known, many of the resemblances of plant and animal habits to human ways and methods have been noted, even if not commented upon. Certainly at the beginning of the twelfth year and perhaps a year before, there should be explained to the girl the phenomena and the purpose of menstruation, and to the boy the significance of sex awakening, sex feeling, and the seminal emission. From now on, of course, much of the gradual, quiet instruction must necessarily be in classes made up of only one sex. Moreover the teacher should from now on be of the same sex as the pupil. Even in biology and anatomy, I think the boys and girls are better instructed in separate classes.

The ideal method would be to work and play with classes of one or two. The next best thing is the smallest possible class, even if it be larger than one would choose. The larger the number of children, boys or girls, the more necessary an abiding, deep, personal interest in each one on the part of the class leader, and the more essential his or her personal magnetic hold on the class. The larger the class, therefore, the greater the necessity for a truly capable teacher.

During this period personal hygiene, with special relation to the future home, holds a prominent place in the subject matter to be taught. The sex organs and their functions can easily be dealt with from the standpoint of the public health. The dangers involved in their abuse should be mentioned, but should never form a matter of lengthy or agonized discussion. Constructive rather than punitive teaching is here the order of the day.

At this age can also be taught the ground principles of the hygiene of food and digestion, exercise and play, of the influence of cold as opposed to bodily warmth, of drugs (opium, tobacco, cocaine, alcohol, tea, coffee), all in their relation to sex health and sex control and heredity as it will be evolved in the future child. Such a procedure as the Mayor and Commissioner of Parks placarding a city against alcohol for the public welfare, as in Cambridge, will appeal mightily to the growing sense of citizenship in the child.

At sixteen years the average boy requires and the girl ought to have full teaching, not only regarding biology, animal breeding, human eugenics, and sex hygiene, especially in its new and rational form relating to individual chastity and the single standard of moral and physical health for the two sexes. The existence and the source of the social diseases must be known, also their ubiquity, and their intimate relation

to sex irregularities and misdoing. I have known many boys and even girls of fifteen years who were old in sex depravity at that tender age. The girl, to my mind, requires teaching just as early, just as ample, and accurate, and intelligent. If she is to avoid an unfortunate choice of friends and finally of a life-mate, it will only be because of her clear understanding of the fact that there are clean and also unclean men, and that a scrutiny of the life record is the best method of distinguishing. Few girls of the future will deliberately choose, I think, a "man with a past" (as the saying goes), because that will mean also taking to her bosom and into the life of her child physical disease.

Both the boy and girl should be taught the simple facts regarding the sex life of one another. Thus the girl cannot fail to be ennobled in the estimation of the boy by his clear comprehension of all it cost his mother to give him life. A boy often becomes truly reverent toward a girl after he has had explained to him the significance of her monthly promise of motherhood. In the same manner the girl should understand much of the sex physiology of the boy. It is due her that she should know clearly the nature of the semen, its vitally important and dangerously vital contents, and the likelihood of maternity should the sex advances be tolerated that are so frequently regarded as permissible, at least under promise of marriage, and all too frequently without even that flimsy safeguard. She should not be allowed to enter wedlock either a frightened, uninformed child, or a brazen woman who has lost all modesty and with it the wife's dearest charm.

At the seventeenth year, and from then onward, more and more can be imparted to both sexes of the sociologic relations of normal sex hygiene, heredity, eugenics, prostitution, and the social diseases. All of these should be studied from the viewpoint of the young citizen. Both the boy and girl can at a far earlier age than sixteen and seventeen appreciate and prize their public influence. It is because they are entrusted with helpful knowledge too late that so many of them outgrow the ability to realize that they have any responsibility except to the selfishness of their own passions.

Just a closing word with respect to the

Teaching of Adults. Many are more ignorant and all are more prudish, and therefore more difficult to instruct, than children. Very frequently with them it becomes necessary to reverse the order of procedure, to teach them backward, as the children would say. Often-times they must first be instructed in the more repelling facts of sociology, bad housing conditions, prostitution, the social diseases, in order to demonstrate to them the necessity for attention on their own part and for the teaching of normal sex hygiene to their children.

Thus the social diseases have served as a means to an end, and have been literally providential. Nothing else would have succeeded as an entering wedge. Certain students are apparently creating for themselves the dread of a bugaboo in the form of a fear that unwarranted emphasis may be laid upon these diseases that spring from the shaming of woman by mankind. They need, however, have no concern on this score. I know of no honest and intelligent worker who is using the facts and statistics relating to syphilis and gonococcus disease as more than a lever to lighten the load. Soon other implements will be more serviceable in this particular field. Certain it is, however, that these diseases of immorality, which choose seemingly by preference the innocent, are the great crying problems of the day. They are annually costing the nation many lives, mainly from among our women and children, rich and poor. On their eradication more than upon any other one influence depends the ultimate safety and the sex integrity as well as the general health of the American public!

But whether it be by this method or by that, whether an adult or a child be the object of our solicitude and care, the goal is the same! We are trying to reconstruct our country into a land of homes. We are fast losing, if we have not already lost, the right to the old characterization, the land of the free! Our women and children are not free! We must regain that cherished title, and in order to succeed we must redeem ourselves before our own consciences by first placing woman where she belongs on a plane of social and moral and political equality with man; then by granting to the child its freeborn right to life and health; and finally by digging again the old wells which our fathers digged, by restoring the family altar, and through it the home.

I have not attempted to suggest a textbook because I am convinced that none should be used during school days. There are helpful books for the instruction of the teacher, but the pupil (at least the young pupil) neither needs nor is himself in the presence of the printed page. Moreover I have never seen a book on sex hygiene that I would place in the hands of the boy or girl. Sex hygiene must be taught in all its steps and phases by a splendid type of man or woman, and with his or her eye fixed in a deep interest upon the answering look of the child. If this be impossible, something has gone awry, and there had better be no further teaching. Sex hygiene taught to boys and girls in the dark (as with lantern demonstrations), sex hygiene read from the printed or written page, sex hygiene taught in any other way than by direct word of mouth, is likely to work harm and should not be ventured.

We are treading new, but fertile ground! Each new pedagogue will press out his or her own path through the growing grain. I have merely endeavored to offer a few general suggestions that may serve to

inspire some to essay the attempt to teach, and restrain others from the experiment.

If everyone who enters upon the work will but half appreciate the privilege and responsibility that center in and grow from the sex training of the endless life chain that begins in one boy or girl, then I am sure he and she will have caught the keynote of the most absorbing harmony life has ever assigned as a task for the teacher-student to evolve. There is something uncanny and discordant in the individual that fails to leap toward the opportunity to construct loyal parents and citizens out of children. Moreover, this is the chief end of sex hygiene!

INSTRUCTION IN THE SCHOOLS CONCERNING SANITARY MILK

BY

ERNEST KELLY

Thomas Jefferson declared that, "We hold these truths to be self-evident: that all men are created equal; that they are endowed by their Creator with inalienable rights: that among these are life, liberty, and the pursuit of happiness."

From the standpoint of public health this hardly applies; gaunt poverty, the sins of the fathers, and other malign influences place their imprint upon the babe unborn, so that many children enter this world with a handicap which is perhaps never overcome. It is our duty, then, to equalize as much as possible the race course and to tear down these obstacles. As Eugene Field has written:

"It's right the old should die, but that a harmless little child
Should miss the joy of life and love, that can't be reconciled."

It has been said that "Public health is public wealth." Let us then bend every effort toward piling high the coffers of the commonwealth with the golden treasure of physical soundness. This is a never-ending task; it begins with the baby, is continued with the child, and culminates in the adult, who in turn, implants his influence on the succeeding generation.

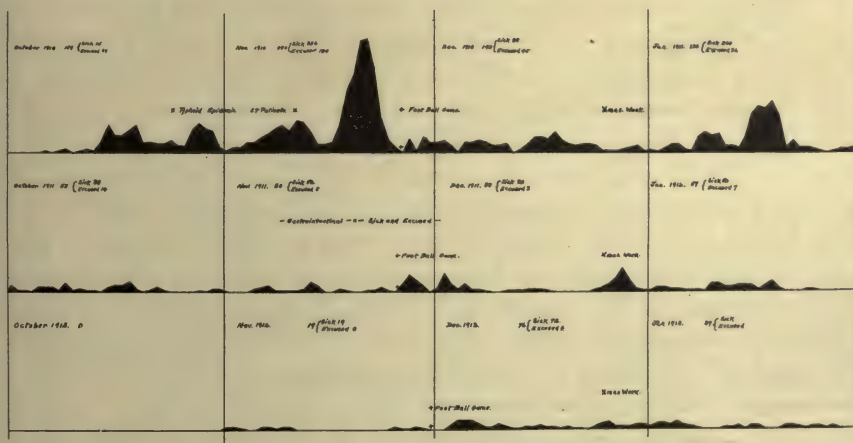
It is particularly the mission of this Congress to deal with that stage of life which is the transitional period and during which the individual is most readily molded both in mind and body. And it seems to us that educators, to gain the full measure of success, must take cognizance of both the physical and mental development of their charges. We shape the mind of the child so that it may grow to be an intelligent factor in the progress of our scheme of civilization; so must we shape the body that we may have fit parents for the perpetuation of the race, and fit citizens for our communities. "All healthy things are sweet tempered," said Emerson, whose words have been amply proved by subsequent investigations of causes underlying crime.

Our duty in the schools then is dual—to keep the child healthy and to teach it those principles of sanitation which, when they are once inculcated, will work not only for personal good but for community betterment.

This is no new doctrine to you who have been leading the van of

modern pedagogy. However, the application of these principles to the milk question has been, so far as we can ascertain, decidedly limited, and there is need of much further work along this line.

In the light of present-day knowledge, it is an undisputable fact that milk is an important factor in the conservation of public health. Many have considered that infected milk does damage only to young infants. It is true that probably a large proportion of the sickness due to dirty milk is found in children under two years of age, but those who have studied the question at close range believe that the advantages of clean milk follow the individual through childhood and affect even the adult. An instance of this can be seen in the case of the United States Naval Academy at Annapolis, Md. Prior to October, 1911, this institution drew its milk supply from adjacent farms where conditions were far from satisfactory. An outbreak of typhoid fever late in 1910 emphasized the importance of having a dairy under the personal control of the Academy authorities. Paymaster Samuel Bryan, who is in charge of the food supply at the institution, applied to the Department of Agriculture for help with the result that a modern dairy plant was installed which was capable of supplying the needs of the students. Since the installation of this plant, extremely gratifying results have been obtained.



This chart is a four months' record of daily sick excuses for gastrointestinal disorders, before and since the establishment of the dairy. The same months are shown in each case. So far as can be ascertained all factors, with the exception of the milk supply, are identically the same. The results were obtained not with infants of a tender age, but with young men especially selected for their vigor and physical perfection.

From October 1, 1910, to October 1, 1911, the year immediately preceding the installation of the dairy there were 1,595 sick days from gastro-intestinal disorders. The first year when pure milk was used (October 1, 1911, to October 1, 1912) there were only 296 sick days, or a reduction of over 81 per cent. For the nine months from October 1, 1912, to July 1, 1913, there have been only 220 sick days, and this year promises to reduce the rate still lower. It should be remembered that 1910 was not a particularly bad year, but on the contrary was rather good, compared with previous years.

If, then, it is your duty not only to train the mind but to keep the bodies of your charges at their maximum efficiency, it seems to us very proper that more attention should be paid to supplying pure milk to school children. We do not know how much is being done in this country along these lines, but in certain foreign cities the plan has been successfully tried. Monrad reports that the Cologne city authorities distributed 664,200 portions of milk and bread to poor school children in 1911 at a cost of \$12,024. Small bottles holding .2 of a quart were delivered by a milk company at about a cent apiece. Considering the food value of milk and the often insufficient lunches of many of our school children, it would seem that the schools would do well to distribute pure milk at noontime, either free or at a nominal price.

Aside from these mere physical benefits (which, as you know, have an important bearing on mental efficiency) let us consider for a while whether it would not be profitable to educate our school children in the elements at least of the milk question. Milk is such a valuable and universal food that practically every household comes in intimate contact with it, and, owing to its susceptibility to contamination, it is a food which should be handled with the most extreme care. It is a fact that much of the contamination which milk receives comes after the commodity has left the dairyman's hands. We can conceive of no higher mission for our schools than to disseminate information which will teach the embryo citizens how to properly view the milk question. The place of milk in the diet should be considered not only by the schools of domestic science, but elsewhere as well.

One of the greatest obstacles to the securing of pure milk at the present time, is the fact that average consumers are totally ignorant concerning milk. They do not realize the food value of milk; they do not know the dangers of impure milk; they do not appreciate the fact that there are various grades, even of good milk, and not appreciating this, they are unwilling to pay a premium to those dairymen who, by additional labor and expense, produce an article of high quality and value. If, then, we can logically and forcefully teach these truths in a calm man-

ner, we will rear a lighthouse for future generations which no undertow of ignorance or tempest of hysteria can overturn.

It is the province of those better versed in the science of teaching than ourselves to arrange a course of instruction dealing with these subjects, but we would like to outline briefly some of the things which might well be considered in formulating such a course. This is simply a tentative outline and is capable of expansion and rearrangement to adjust it to different classes:

1. Meaning of common dairy terms, Inspected, Certified, Pasteurized, Tuberculin tested, etc.
2. Physiology of milk production.
3. Milk as a food:
 - The food value of milk.
 - Functions of the various food elements.
 - Money value of milk compared with other foods.
4. Chemistry of Milk:
 - Composition of milk.
 - Causes of variation in composition of milk.
 - Adulteration of milk.
 - Skimming.
 - Watering.
 - Preservatives:
 - Danger from their use.
 - Used to cover methods.
5. Bacteriology of milk:
 - What bacteria are.
 - How they grow.
 - Effect of temperature on growth.
 - Effect of age on growth.
 - How bacteria are counted.
 - Relation of bacteria to cleanliness in production and handling.
 - Dangers from bad milk:
 - Tuberculosis.
 - Contagious diseases.
 - Gastro-intestinal troubles.
 - Tuberculosis:
 - Often found in cattle.
 - Can be transmitted to man.
6. Sanitation at the farm:
 - Cows—health and cleanliness.
 - Buildings—construction and cleanliness.
 - Necessity of sunlight and ventilation.
 - Necessity of care in milking.
 - Necessity of prompt cooling.
 - Construction and cleansing of utensils.
7. Transportation to the city:
 - Refrigerator cars.
 - Distance milk sometimes travels.

8. Sanitation in the city:
 - The city plant.
 - How milk is handled and bottled.
 - Necessity of cleanliness.
 - Dangers of "loose" or dipped milk.
9. Pasteurization:
 - How it is done.
 - Flash vs. holding system.
 - Pasteurization kills many germs.
 - Pasteurized milk not changed chemically to any extent.
10. Clean vs. Dirty Milk:
 - Poor milk dear at any price.
 - Why clean milk costs more than dirty milk.
 - Can afford to pay more for clean milk.
11. Some signs of good milk:
 - The amount of cream.
 - Freedom from unpleasant odor or flavor.
 - Freedom from sediment in bottle.
12. Milk in stores:
 - Bottled milk best.
 - See that milk is kept in refrigerator.
 - Don't buy milk from a dirty store or where the salesman is dirty.
 - If "loose" milk is bought, always take a scalded, covered receptacle to the store.
13. Care of milk in the home:
 - Never let it stand in the heat.
 - Keep in a clean ice box.
 - Keep it covered.
 - Don't drink out of the bottle.
 - How to Pasteurize in the home.
 - Construction of home refrigerators.
 - How to keep milk cool without ice.
14. Uses of milk:
 - Methods of preparing dairy products for the table.

From an elaboration of the above subjects it will be possible to outline a systematic course of instruction concerning milk, which can begin with the lower school grades and can be continued almost indefinitely. We would suggest that particular care should be taken to teach children not to regard all milk as a dangerous food, but to early impress on their minds the fact that milk is a relatively cheap and useful source of nourishment.

After some of the elementary ideas have been implanted, the first duty it seems to us, is to teach the proper care of milk in the home. There are two reasons for this; first, it is less complex and more easily demonstrable, and second, it is that phase of the question which is capable of everyday application by the child.

Later on should come the instruction in food values, elements of bacteriology and farm sanitation. More advanced students will find

it profitable to make some detailed studies of the chemistry and bacteriology of milk, and classes in economics have a broad field opened to them through the study of milk.

Numerous demonstrations can be arranged both in and out of the class rooms. The care of milk in the home, and the use of milk in cookery can be illustrated. Simple processes such as the Babcock test for fat and the use of the lactometer to determine specific gravity may be shown and also Petri plates showing the growth of colonies of bacteria from milk.

The more advanced pupils in small groups may be taken to some city milk plant to see the actual handling of milk in such an institution. In the smaller towns it will be feasible to visit a well-kept dairy farm at milking time.

In closing this paper we wish to reiterate our opinion that the study of milk, and particularly milk sanitation is peculiarly suited to general educational work, aside from agricultural schools and colleges. It is impossible for us to imagine a subject which affords such diverse fields of instruction and which at the same time is so vitally important in individual and community betterment. The Dairy Division of the Department of Agriculture will gladly confer with those who wish to work along this line, and will give any assistance possible.

Appended is a list of publications of this Department which bear on the subjects suggested in this paper:

- B. A. I. Bulletin No. 81. The Milk Supply of Boston, New York and Philadelphia.
- B. A. I. Bulletin No. 138. The Milk Supply of Chicago and Washington.
- B. A. I. Bulletin No. 157. Variations in the Composition and Properties of Milk from the Individual Cow.
- B. A. I. Bulletin No. 156. The Influence of Breed and Individuality on the Composition and Properties of Milk.
- B. A. I. Bulletin No. 155. The Influence of the Stage of Lactation on the Composition and Properties of Milk.
- Farmers' Bulletin No. 490. Bacteria in Milk.
- B. A. I. Circ. No. 153. The Dissemination of Disease by Dairy Products and Methods for Prevention.
- B. A. I. Circ. No. 158. Improved Methods for the Production of Market Milk by Ordinary Dairies.
- B. A. I. Circ. No. 142. Some Important Factors in the Production of Sanitary Milk.
- B. A. I. Circ. No. 199. The Score Card System of Dairy Inspection.
- B. A. I. Bulletin No. 166. Chemical Changes Produced in Cows' Milk by Pasteurization.
- B. A. I. Circ. No. 170. The Extra Cost of Producing Clean Milk.
- B. A. I. Circ. No. 217. The Control of Bulk Milk in Stores.
- Farmers' Bulletin No. 413. The Care of Milk and Its Use in the Home.
- B. A. I. Circ. No. 197. Directions for the Home Pasteurization of Milk.
- Farmers' Bulletin No. 363. The Use of Milk as Food.

PREVENTIVE MEDICINE SHOULD BE TAUGHT IN OUR SCHOOLS

BY

WM. J. TRACEY

It has been stated that humanity fails to appreciate nature's gifts until threatened with their loss. This is true of nature's greatest gift, life itself. Life, although near and dear to everyone, is an uncertain possession. It has been compared to a lighted candle, for a time burning brightly, illuminating its surroundings, when suddenly and unexpectedly a gust of wind, coming out of the west, blows upon it, and it flickers and dies.

It has been stated that from the cradle to the grave, life for the most part is a series of blunders, and on account of these blunders, sickness begins with many in infancy, and continues more or less persistently until life is no more. Most of this sickness and suffering attending it is caused by diseases known to be preventable.

Preventive medicine has for its object the prevention of disease. It endeavors to protect the individual from the dangers that surround him. It aims to prevent misery and suffering. Its objects are to promote happiness and prosperity, for on public health depends, not only the happiness of a people, but on it also depends the power and prosperity of a nation.

The germ theory of disease is the foundation, not only of preventive, but of modern medicine. The primary elucidation of this grand theory originated with the surgical branch of the healing art. Let us for a moment consider what the practical application of this great theory has done for surgery. Prior to the introduction of antiseptics, one-half of the patients operated upon, died from wound infection. Hospital gangrene, pyaemia, septicaemia and erysipelas were common complications. Hospitals were frequently closed on account of their high death rate. Death so inevitably followed operations upon some cavities of the human body, that eminent authorities claimed such cavities would forever remain sacred from the surgeon's knife. What has been the result since the introduction of antiseptics? In other words, what has prevention done for surgery? The mortality after major operations to-day is almost nil. Hospital gangrene, pyaemia, septicaemia and erysipelas are rarely seen, and when they occur are usually due to ignorance or negligence on the part of the surgeon or his attendants. The surgeon to-day recognizes no cavity of the human body as sacred.

The very centers of life and function are operated upon, and recovery is not only hoped for, but confidently expected. The miraculous success of the surgeon is due not so much to his skill, as to prevention of infection, which eliminates the complications which proved to be so fatal in the past. It has been truly said that prevention is the watchword of modern practice, and that by the proper employment of preventive measures, surgery has become a conservative branch of the healing art. What prevention has done for the surgeon, it can do for the physician and sanitarian. By the proper employment of preventive measures, diphtheria, scarlet fever, typhoid fever and tuberculosis would become as rare as hospital gangrene, pyaemia, septicaemia and erysipelas.

To obtain these results, however, the physician and sanitarian must have the intelligent coöperation of the public. We all know that the public in general are profoundly ignorant of the wonderful discoveries that have been made, in relation to the prevention of disease, and consequently are denied the benefits and blessings, which should result from them. Our late war with Spain furnishes a striking example of this. It has been stated that only 496 of our men were killed in battle or died from wounds, while 2,774 were killed by disease germs.

We were to a certain extent prepared for our battles with the Spaniards, but we were not prepared to fight the microscopic enemies of life, which proved to be more dangerous than the Spanish bullets. We had a Secretary of War and a Secretary of the Navy in the President's Cabinet, but no Secretary of Public Health, no expert sanitarian to look after the interests of the boys in blue. As a result 2,774 of the bravest hearts that ever beat in manly bosoms, are molding in premature graves. What a sad lesson when we consider that most of the lives could and would have been saved, had precautions known to be effective, been taken.

For years the medical profession have petitioned Congress to create a department of Public Health, but their petitions have been in vain, and their appeals unavailing. They have learned the lesson that to obtain recognition and accomplish results, the public must be educated on this important subject. This education, to be effective, must begin where the foundation of all education is laid, namely in the schoolroom. The children should be taught that happiness and success in life depend upon health, and that to acquire and enjoy perfect health, they must study the laws that govern it.

They should be taught that one-fourth of the diseases that destroy life are absolutely preventable, and that fifteen years would at once be added to the average duration of life, if the practice of hygiene were placed on a level with its theory.

They should be taught that scarlet fever and diphtheria, diseases

which in the past have filled our graves with curly heads, and our homes with sorrow, are unnecessary, accidental, and preventable.

They should be taught that tuberculosis is the greatest foe of mankind; that it attacks one out of three, and kills one out of seven; that it has destroyed more lives than the swords of all ages, and caused more misery and suffering than all the wars and famines that have ever existed; that to-day it is destroying the youth and beauty of our land, and taking from us our nearest and dearest; that it is contracted in the majority of cases by the inhalation of tubercular dust, caused by the filthy habit of spitting; that it is unnecessary, accidental and preventable.

They should be taught that typhoid fever is due to ignorance, negligence and carelessness; that it is seven times more prevalent in this country than in Germany, and ten times more prevalent than in Switzerland; that an epidemic of typhoid fever due to an infected public water supply, is not only a misfortune, but a crime, and a corporation or municipality guilty of furnishing such water should not only be censured, but sued for damages.

They should be taught that pneumonia, one of the most fatal diseases of infancy and old age, is an infectious disease, and should be treated as such.

They should be taught that milk, the food of the infant and the invalid, is the most nutritious, the most valuable, as well as the most dangerous food, consumed by man; that it may be the medium through which are conveyed the germs of diphtheria, scarlet fever, typhoid fever, and tuberculosis. They should be told that 200,000 infants are killed each year by infected milk, and that Herod still reigns, while this slaughter of the innocents goes on. They should be taught that the clear crystal water from the bubbling spring, and the refreshing draught from the old oaken bucket, may contain and frequently does contain, the deadly germs of typhoid.

They should be taught that the germs of tuberculosis and typhoid fever retain their vitality for months, fast frozen in a block of ice, and that the piece of cracked ice, so eagerly sought for and so frequently given, is not free from danger. They should be taught that the free text books, so generously distributed, if not properly disinfected, may contain within their pages, the deadly germs of diphtheria, scarlet fever and tuberculosis. They should be told the story of the twenty clerks in a German Labor Bureau, who contracted tuberculosis, after working over books, which were found to be infected through and through with tubercular bacilli. On investigation it was discovered that the books were infected by a consumptive clerk, who had the habit of moistening his fingers in his mouth, before turning their pages. They should be taught that the mosquito can inoculate the human being with germs

of disease, and that the common house fly may be the medium through which disease germs are conveyed to our food.

Teach the little ones the nature, cause and mode of dissemination of the infectious diseases, so that they may avoid them.

Teach them the name of Morton, who gave to the world anæsthesia; the name of Jenner, who discovered vaccination; the names of Lister, Pasteur and Koch, who gave to the world the germ theory of disease. Teach them that no act of herosim ever displayed on the field of battle, surpassed that of Lazear, Carroll and Reed, who in order to prove to the world that yellow fever was caused by the mosquito, willingly exposed their arms to the poisonous bite. By so doing they saved thousands of lives, robbed the Canal Zone of its terrors, and made possible the construction of the Panama Canal, the greatest engineering feat of modern times.

Impress upon them that these men are not only the greatest of the world's discoverers, but the greatest philanthropists that the world has ever seen. Mankind owes them an everlasting debt of gratitude. The names of these great ones should be as familiar as those of our statesmen or heroes of the battlefield. They should be on the lips of every school child; they should become household words; precious names that should be taught to the prattling child, at the mother's knee.

Teach the little ones the fundamental principles of preventive medicine, so that they may avoid some of the dangers that are strewn along life's pathway. If the State assumes the responsibility of educating the child, so as to make it an intelligent citizen, and a useful member of society, is it not the duty of the State to furnish the child with the necessary knowledge to enable it to preserve its health? Of what use is the knowledge of Greek or Latin, if the possessor of it goes to an early grave, through ignorance of the laws of sanitation? Is not that system of education defective, that permits a brilliant light to be prematurely extinguished by a preventable disease? Let us, therefore, educate the children on this important subject. It is a duty we owe them. Teach them how to live, that they may avoid sickness, misery, suffering and death from preventable disease.

With their assistance and with the intelligent and hearty coöperation of the public, prevention will do for the physician and sanitarian what it has already done for the surgeon.

This Congress, international in character, and universal in scope, instituted for the promotion and preservation of the health of the child, can accomplish its object in no better way than by advocating the teaching of preventive medicine in our schools. Such a resolution should be adopted by this Congress, and a committee appointed for the purpose of having it introduced into the Legislature of every State in our Union, and into the legislative body of every country in the civilized world.

THE USE OF GRAPHIC MATERIAL FOR THE INSTRUCTION OF SCHOOL CHILDREN IN SPECIAL PHASES OF HYGIENE

BY

E. G. ROUTZAHN

I am not a school man; merely one of the interested "outsiders" who has had some opportunities for glimpses behind the scenes of school needs and school methods, plus some opportunities ranging from primary grades to university of personal experience in attempting to coöperate a bit with those on the "inside."

So I submit these surface suggestions with the modesty befitting the nonprofessional who knows not even the phrasing of the teacher in discussing school methods.

The picture is an accepted factor in both the formal and the so-called "popular" education of the day.

To the stereopticon slide and the stereoscope have been added the exhibition, the opaque projector and the motion pictures.

With a wide range of efficiency in use pictured truth is more or less an element in the education of a considerable proportion of the youth of the present generation.

If, wonder of wonders, there should be a "doubting Thomas" in this conference may I urge that he note the few exhibits in the exhibition hall which offer material for actual instruction purposes; several of these are samples of the photograph utilized in the elementary school.

Note the pictured lessons offered by the American Museum of Natural History showing fruit, drinking cups and pencils as disease carriers.

Examine the pictured story of the unsafe Fourth of July, and the graphic portrayal of Taking Chances With the Unloaded Air Gun as exhibited by the American Association for the Conservation of Vision.

See also the crude but striking pictures the Cincinnati Health Department uses for teaching how to brush the teeth.

Surely these exhibits will win an assent to the idea that pictures will awaken interest and claim attention far more surely than a teacher's talk or a formal lesson period on the protection of the eye, the care of the teeth, the prevention of disease, or the avoidance of accident.

And again for the purpose of winning the very necessary community support for school sanitation may it be urged that the exhibition hall contains examples of picture appeals likely to be more convincing than extended verbal attacks upon unsanitary conditions.

Now the school nurse work is shown by Buffalo. Contrasting closet conditions are presented in striking form by the New York State Education Department, which also pictures the dangerous drinking arrangements to be found in numerous schools.

Both child and adult can look at dirt and danger without seeing it, but the pictured portrayal of the same ugliness and the same disease sources are seen and recognized clearly and effectively when presented in a graphic reproduction.

May I suggest rather crudely that the great need of school hygiene is something to correspond with nature study in its relations to natural science, and civics as preparatory to civic government.

Interest in the *idea* of health needs to be awakened, as well as *informed interest* in the fundamental facts and principles in the care of the human body and the prevention of disease.

The average intelligent adult—the school child of yesterday—is not at all *interested in health*, he becomes concerned only in case of *ill* health.

The problem before us then is a simple one of advertising—sell good health—or at least to teach children and youth to care about possessing health and the adult school patron, to care enough to bear the expenses necessary to the health of the child.

Can this appeal through the eye be made more effective?

Can it be more generally utilized?

Can it be adapted more fully and more helpfully to aid in meeting the growing demands of the school hygiene movement?

These questions are hastily discussed in what follows.

Graphic material for school purposes may be divided roughly into two classes.

1. Material available outside the school building.

2. Material produced in or brought into the school building from the outside.

Both classes may include material for direct instruction of the child as well as propaganda material for creating a community constituency in support of what the school will undertake to do.

Outside the school may be found the exhibition, permanent or traveling, the illustrated lecture or address, public health offices, and the plants of public utilities affecting health and sanitation. Properly planned "personally conducted" visits have been featured by many schools. The value of the idea depends largely upon the thoroughness of the method. "Children's Days," with mere masses in attendance, are well nigh worse than useless. Much of the tuberculosis exhibition coöperation with schools has included a comprehensive program: A preliminary "talk," planned chiefly to awaken interest—such interest

as would even lead the young people to "talk tuberculosis"—to this has been added various items, including a series of questions to be answered, the writing of a letter to the "home folks," and so on. Then came the visit to the exhibition during school hours, as a part of the school work, in class groups in charge of the school teachers. At the exhibition hall a specially arranged stereopticon talk supplemented the previous presentation, and prepared for a tour of the exhibits. Usually some English work provided a "follow up" in the class room. It would seem that all visits outside the class room should be handled in some such fashion.

Among the forms of graphic material useful in the class room or in the school building may be mentioned the following:

(a) Through special equipment:

Stereoscope,
Stereopticon,
Opaque projection,
Motion pictures.

(b) Material produced in the course of the regular class room work. Through hand or figure, by brush or pencil, in shop, or garden, kitchen or sewing room, the regular work of the school lends itself to the purposes of the alert and interested teacher.

(c) Pictures, cartoons and diagrams, gathered from many sources and filed or made into scrap books.

(d) Formal exhibit material of the usual types.

Graphic material for use in the class room or in the school building may come from any of three general directions:

(a) Material produced by the pupils.

(b) Material owned by the single school, the local schools, in coöperation, or the school system. The schools of Chicago by coöperation have built up a valuable and very extensive collection of lantern slides, the same idea being applicable to this particular subject. Clubs of women, parents' associations, and interested individuals may well be encouraged to coöperate in providing equipment which can save successive generations of pupils.

(c) Material owned by private, health and civic organizations.

(d) Material owned by libraries, museums and public health departments.

With the extension of the museum function of the public library it will become increasingly possible to have on file photographs and other flat material, to be followed by the introduction of three dimension

material. Both public and private or volunteer organizations can be cultivated with the hopeful possibility of small lots or individual units being added from time to time to their loan collection or being turned over to the schools for continued use.

Mere reference need be made to the fact that the use of graphic material largely increases the proportion of the class room instruction which is being carried into the home. Then, in turn, comes more intelligent and sympathetic coöperation between the home and school, and in time a more responsive community, constituency for school efforts in hygiene.

Supplementary methods may sometimes be linked with the use of graphic material. Two diverse examples may serve. One is the demonstrator who comes from the outside with an exhibit, the outside speaker being familiar with the subject matter of an exhibit; the outsider who can bring slides or other illustrative material. In all such cases the layman should seek to understand and to adjust himself fully to the program and the procedure of the school; because you serve a "good cause" is no warrant for upsetting or reorganizing the school. This word of warning is given in view of known experiences in movements by outsiders to introduce civics and citizenship instruction into schools.

The second example is the use of the health or civic club, with meetings, committees, and other fascinating details the interest of which depends largely upon simplicity of plan and the use of subject material within the range of the pupils' experience and observation in contrast with matter copied from encyclopedias or health books.

Probably mention should also be made of the use of dramatics and all play forms of teaching. Much of the subject matter under discussion may thus be worked up into palatable and effective form for both children and parents.

A last word as to the preparation of exhibits is in order. All the little attention has been paid to both literary arrangements and mechanical instruction. A valuable use of the exhibits in the Broadway Auditorium would be to make a careful study of their good and bad points. Much remains to be learned about exhibit construction, but many important principles have been given general acceptance, although all manner of exceptions to all of the rules are illustrated in the Auditorium.

May I extend a two-fold invitation? During the Congress I would be glad to meet interested people at the consultation bureau of the Auditorium, opposite the entrance, usually between 11 and 1, and at other hours to be announced or arranged, to meet the convenience of anyone.

Then, throughout the year I would be glad to correspond with any who care to test out suggestions offered this morning or any methods in the same field.

MUSEUM CO-OPERATION IN THE TEACHING OF SCHOOL HYGIENE AND SANITATION

BY

C.-E. A. WINSLOW

All of us in attendance at this Congress are probably convinced that the science of life and health is the one thing which should be taught in the public schools whatever else may be neglected. I know, however, that there are many who are quite as insistent on the importance of Grammar or Arithmetic, or History or Drawing, or French or Carpentry, or Cooking or Basket Work, and the result is that many School Boards shut their ears to us all alike. Nevertheless, I am ready to brave the obvious reproach of being merely another faddist by urging that the principles of biology and public health should occupy a truly central place in the curriculum of elementary and secondary schools, and I believe that the things for which such a Congress as this stands are not the idiosyncrasy of a few enthusiasts but, if properly presented, have behind them an overwhelming force of public opinion.

It is an obvious truism that education is meant to prepare for living, and it seems clear that the most general and fundamental phases of the art of life should receive proportionate representation in the preparatory process. The average man uses his history once a day perhaps, his arithmetic somewhat oftener. Even his English grammar is on trial during a part of his waking hours only and his whole mental equipment is put by for a third of the twenty-four. He is *living* all the time, however, and is either well or ill, happy or miserable, efficient or useless, largely as a result of the conduct and management of the delicate physical machine which is in his charge. He may be innocent of historic fact, of the multiplication table and of syntax, and yet be a useful and contented citizen. He cannot be either, long, without observing the laws of hygiene and sanitation. I fancy that anyone with a child of his own will have no doubt that knowledge of what to eat and what not to eat and why, of the meaning and importance of fresh air, of the claims of exercise and rest, of the essential routine of body cleanliness, of how germ diseases spread and how they may be controlled, of the methods of rendering water and milk safe and the reasons therefor, of the dangers of insect-borne disease and of the essentials of public sanitation, are of even greater moment than those things which prepare for the intellectual and social life.

There might be two reasons for the comparative neglect of this

transcendently important subject, a neglect which still persists, in spite of the encouraging development of recent years. It might be claimed that although it is desirable to keep healthy we have no body of knowledge which will enable us to do so. This was undoubtedly true in the past and is historically the reason why biology and public health have occupied so obscure a place in the curriculum. It is not true any longer. We have to-day a large number of principles and applications which enable us to keep the bodily machine in the best working order and to guard it against the insidious attacks of communicable disease. Or, on the other hand, it might be that—though essential and available—knowledge of how to live a healthy life could better be obtained in the home than in the school. It is obvious that this claim is wholly untenable, not only with the teeming populations of the tenements who come often from sanitary conditions in other countries of a lower grade than ours, but even with many of the most enlightened households, since, in a subject growing so rapidly as sanitary science, knowledge ten or twenty years old is almost as good as none. There is no other single thing which the child needs so much to know as how to keep well. The knowledge which is essential is available, and it can be transmitted only by the school.

The High Schools in New York City have seen this need and this opportunity and have done much toward meeting it. In almost all of them the practical aspects of biology occupy an important place and in many of them, like the DeWitt Clinton High School and the Morris High School, the broader aspects of sanitation are well taught under the head of Civic Biology, while the larger girls' schools, the Washington Irving and Wadleigh High School, have developed exceedingly promising courses in home sanitation as well.

In this work there seemed to be an opportunity for coöperation between the newly organized Department of Public Health of the American Museum of Natural History and the public schools of New York; and it is of this coöperation that I wish to speak very briefly to-day.

The existence of a Department of Public Health in a natural history museum deserves a word of explanation by the way, for it is, so far as I am aware, a unique circumstance. The American Museum is, I think, the first institution of its kind to grasp the opportunity of attacking the educational problem of public health by the use of museum methods. The development is really, however, a natural, almost an inevitable one. Man is an animal and public health is one of the most important phases of his natural history. He is knit up with other animals and plants in a complex chain of interrelationships, beneficent and malign. The plants and animals which serve him for food, the

microbes which cause some of his deadliest diseases, the insects and other animals which serve as intermediate hosts, and those which prey upon them in turn, all affect him and act as determining factors in the fate of nations and the progress of civilization. They are as much parts of natural history, broadly interpreted, as habitat groups of birds or preparations illustrating the relations of insects to the plants or other insects upon which they feed. To show these things in graphic forms by actual specimens, by models and by diagrams, is the task of a department of health in a natural history museum and it is a task which no other agency is so well fitted to accomplish.

In the Hall of Public Health of the American Museum we have now, after three years' work, installed three fairly complete series of exhibits dealing with water supply and public health, with the disposal of city wastes and with bacteria, while a fourth series, illustrating the relation of insects to disease is well under way. The water supply series begins with the rainfall and shows by models, diagrams and relief maps how the amount and frequency of rain varies over the continental United States. The physical characters of waters are illustrated by samples of a highly colored water from the Dismal Swamp, of a hard well water from Iowa, of the turbid water of the Ohio River and the like. Glass models show the principal micro-organisms, the Algae, Diatoms and Protozoa, which cause tastes and odors in water supplies. The danger from polluted water is illustrated by relief maps of famous water-borne epidemics at Lausen, Switzerland, and in the Merrimac Valley. Methods of purifying water, by storage, filtration and disinfection are made clear by models, and finally the results of water purification are set forth in a series of diagrams.

The models dealing with the disposal of city wastes include local illustrations of pollution of shell-fish, floating baths and other dangers of the harbor waters of New York and a detailed presentation of the methods of treating city sewage by screening, sedimentation, filtration and disinfection.

The bacterial exhibit consists of a series of glass models of the principal disease bacteria, 25,000 times natural size and of photomicrographs illustrating their relative size and shape, and of actual colonies of many types of useful and harmful bacteria showing how mass cultures of the microbes look to the naked eye.

The relation of insects to disease is a particularly fruitful field for museum work and is the one upon which we are chiefly engaged at the present time. The American Museum already has in its Department of Invertebrate Zoölogy wonderful enlarged models of mosquitoes and the Department of Public Health has just installed a model of the house fly, enlarged forty diameters, which took its skilled artist-modeler,

Mr. Ignaz Matusch, nearly a year to complete. A wide series of facts bearing on the life history of the fly are illustrated as well as the relation of the fly to disease, the practical methods for its control and the results achieved thereby. A similar, but more enlarged model of the flea (carrier of bubonic plague) is now under preparation and we have already installed models, some small and some life size, dealing with the rats which harbor the plague microbe and from which the flea carries it to man. The opportunity for future development, here, and in connection with the mosquitoes of malaria and yellow fever, and a score of other disease carriers, is a tempting one which we hope to develop in the next few years.

This hall is our first opportunity to serve the public schools in their work of health education. They bring their classes to the Museum in one of the periods allotted to Civic Biology and in an hour with these models and diagrams learn more than they could get from books and lectures in a month.

In addition to the hall, which is open to all the visitors to the Museum (numbering eight hundred thousand a year), we arrange special lectures to the school children on the occasion of their visits. It is the policy of the Museum to provide lectures (generally illustrated) on any subject within its field for any teacher who may ask it and for any number of pupils from a score to a thousand. Or if the teacher prefers to lecture himself, we provide the hall, lantern slides and operator. The larger High Schools send their classes twice a year near the end of each term for a talk on Water or Milk, or Insect Borne Disease or City Cleaning or some other topic which fits into their course of study at the time.

New York is a large city however, and the children from many of the schools can only come to the Museum a few times a year. It was necessary to get our illustrative material into the schools themselves if it was really to be effective.

For some time the American Museum has taken an active part in the nature study work of the public schools by circulating loan collections of birds, insects, mollusks, sponges, corals, woods, minerals and the like. Over 500 of these cabinets circulated in 491 schools in 1912, reaching 1,275,890 children. Of this work President Osborn of the Museum has said:

"Step by step a great system of coöperation has been built up between the regular course work in the schools and the visual instruction in the Museum, until the City of New York now affords the most brilliant example in the world of extension to the school system of all the resources of a great museum."

Here then was our example; and at the instance of some of the High School teachers most active in Civic Biology, we have attempted to apply the same plan to public health extension work.

Our first attempt was in the form of an album of large photographs dealing with the Spread and Prevention of Communicable Disease. These were mounted on cardboard panels 20 in. by 30 in., from one to four photographs being borne on each panel. The first panel shows four of the more important pathogenic germs with the text:

DISEASE GERMS

Many sicknesses, and particularly those which are catching or contagious, are caused by little living germs which grow in the body as a mold grows in jelly and make poisons that cause sickness and sometimes death. These germs are harmless-looking things like microscopic sausages, so small that millions might lodge on a pin point; yet they are the cause of tuberculosis and diphtheria and typhoid fever and cholera and many other diseases.

The second panel illustrates the sources of the disease germs, the sick person and the carrier (a patient in bed and a rather rough looking individual carrying a milk bottle by the top in each hand). The next panels show how disease is spread: By water (a map of the famous Lowell epidemic); by milk (a dirty cow barn); by shell fish; by flies; by bathing in polluted water, and by contact. For the latter subject we posed and photographed children who came to visit the Children's Room at the Museum. In one, two little girls are doing sums with a common pencil, as indicated below.



FIGURE 1

HOW DISEASE GERMS SPREAD—VI

These little girls are doing sums with one pencil, which each in turn without thinking puts in her mouth. Whatever germs are in the mouths will be well mixed and any disease which either child has will be likely to spread to the other.

In another panel one boy coughs in his hand and then with the same hand gives an apple to another boy who in the third picture eats it. Another panel shows two children waiting for a drink from a common drinking cup used by a larger companion. Next there follow a series of panels showing how such communicable diseases are prevented. One illustrates how milk may be pasteurized in the home (Fig. 2). Another shows how to make a drinking cup by folding a square of paper. A table set for breakfast and a picture of a charming child washing her hands over a basin furnish texts for a discussion of the importance of using individual utensils and of personal cleanliness. Finally the series closes with pictures of an open sleeping room window and of an outdoor gymnasium, with the legends:

Not all persons who get disease germs come down with disease. If the body is strong and well it can often defend itself against its tiny enemies. One way to keep well is to have plenty of air in all sleeping rooms. Windows should be open at the bottom to let cool fresh air in and at the top to let the hot bad air out. In winter a screen of cheesecloth may be made for the bottom opening to prevent uncomfortable draughts and in the daytime the best way to keep well and able to resist disease is to stay out of doors in the fresh air and sunlight and strengthen the body by wholesome games.

A second album deals more specifically with the Bacteria and their relation to the life of man. The first panel in this series again shows certain typical bacterial forms. The next four illustrate the relation of bacteria to disease by means of maps and diagrams of water-borne epidemics of typhoid fever and cholera (Fig. 3) and milk-borne epidemics of diphtheria and tonsillitis. The sixth deals with the relation of bacteria to decomposition and the practical methods of controlling putrefactive processes, illustrated by a view taken in a canning factory. The seventh photograph, of flax retting in the river Lyss in Belgium, furnishes the text for a discussion of the use of microbes in the arts and industries. The eighth and last illustrates the effect of soil-inoculation with nitrogen-fixing bacteria by two samples of pea plants grown in poor soil, with and without microbic aid.

This album is accompanied by a case of bacterial cultures showing how the bacteria appear in mass growths and how we detect them in water, milk and air. The cultures are mounted on flat wooden backs about 12 in. by 14 in. with braces so that they can be stood up on the teacher's desk. Each case holds three of these stands which fit neatly into a box easily carried by hand. The first stand bears a series of streak cultures showing the form and color of the surface growth of half a dozen striking species and illustrating the production of gas and acid in sugar media by bacteria, the coagulation of milk, and the destruction of a piece of meat by putrefactive forms. The second stand bears two

plates showing colonies developed from a comparable portion of a good and a bad water and two plates showing colonies developed from a raw and a Pasteurized milk and one showing colonies developed from germs deposited by the feet of a fly in walking across the plate. The third stand bears five sterile agar plates which may be opened and infected in the classroom with dust, saliva, finger prints or the like in order to show the children the resulting growth.

The third of our traveling exhibits deals with insect-borne disease. In the album the various life stages of the mosquito, egg, larvæ, pupa and adult, are shown with photographs making clear, for the larvæ and adult, the difference between *Culex* and *Anopheles*. The control of these pests is illustrated by photographs of a swamp in New Jersey



FIGURE 2

HOW DISEASE IS PREVENTED—I

The Board of Health tries to keep dirty milk out of the city, but really clean fresh milk is expensive and the best milk most of us can get is not a safe food raw. Milk of all but the best quality should be cooked before using, like any other food. Pasteurizing (so-called after the great French bacteriologist, Louis Pasteur, who first taught us how to control germ disease) means heating the milk to 150° – 160° Fahrenheit for twenty minutes. This does not injure the milk in any way but kills all the germs of disease. In the picture the baby's milk bottles have been heating in the tin pail and the nurse is looking at the thermometer to see that the temperature is right.

Impure water can be purified in a similar way by boiling.

before and after drainage, by a picture of a mosquito squad oiling catch basins and by one of Mr. W. L. Underwood's remarkable photographs of a goldfish eating larvæ. A diagram of the elimination of yellow fever

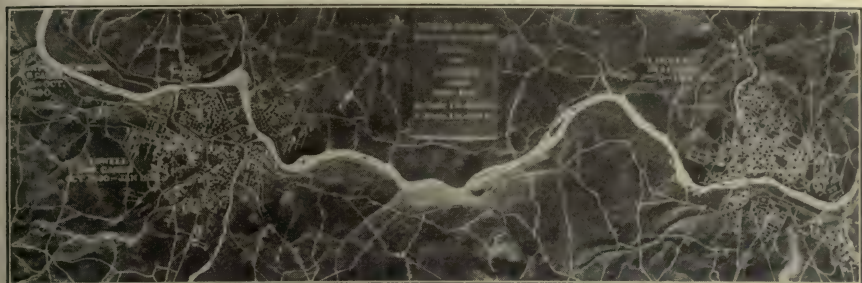


FIGURE 3

BACTERIA AND DISEASE—A. TYPHOID FEVER

Most of the bacteria are harmless and some are useful to man. A few of them, however, are adapted to life in the human body and when they grow in the body the chemical changes they produce poison the body and cause disease. One of these disease bacteria is the germ of typhoid fever which is often spread to large numbers of people in polluted water or milk. The photograph shows how such an epidemic occurred in the Merrimac River valley in 1890.

From August to October there were eight cases of typhoid fever in the little village of North Chelmsford and the discharges passed by way of Stony Brook and Merrimac River into the water supply of Lowell which was taken from the Merrimac four miles below; 503 cases of typhoid fever followed between October and January in Lowell. The sewage infected by these Lowell cases passed down to where the water supply of Lawrence was taken out nine miles farther down and 223 cases of typhoid followed in Lawrence between November and February.

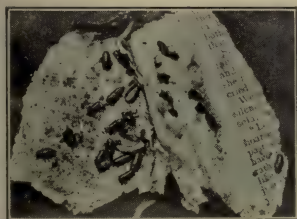


FIGURE 4

THE HOUSE-FLY—I

The house-fly (better called the filth-fly) does not bite and is not the sole cause of any disease as mosquitoes are the sole cause of malaria and yellow fever. It often carries filth to food, however, on its feet or body and in this way may spread diseases like diarrhoea and typhoid fever. The fly lays its eggs in horse manure or some other decaying substance and from the eggs white worm-like larvæ hatch out. These larvæ form brown oval pupæ which hatch out the adult at a period of about ten or twelve days from the time the eggs were laid.

in Havana, shows what may be accomplished by mosquito control in tropical sanitation. In a similar way are shown the life stages of the house fly and its breeding places (a dirty stable and a back yard dump) (Fig 4). An efficient fly trap is illustrated and briefly explained (Fig. 5) and the importance of cleanliness in doing away with fly breeding is indicated by series of photographs of the effective way in which garbage is cared for in the City of Minneapolis. The sanitary importance of fly fighting in the South is emphasized by a diagram of the recent reduction of the typhoid death rate in Jacksonville. The album closes with large photographs of the louse and the flea as carriers of typhus and bubonic plague.

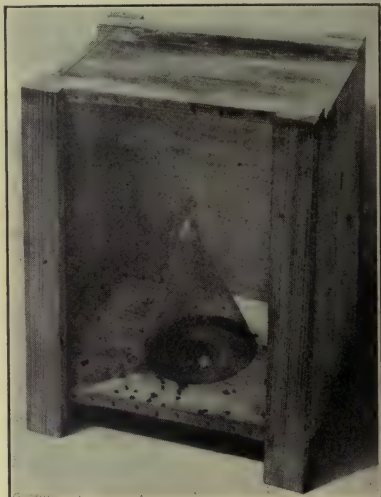


FIGURE 5

FLY TRAPS

Examples are shown of Hodge fly trap on a garbage barrel, and of a simple and efficient fly trap devised by Dr. E. K. Dunham. Any boy can make one from an old soap box and some wire gauze at a cost of ten or fifteen cents. Some suitable bait (best a fish head) is placed under the trap and flies attracted by its odor pass upward toward the light (as flies always do) by way of the gauze cone into the interior of the box. Here they soon die and may be removed through a door at the bottom and burned. The flies in the trap represent in each case a twenty-four-hours' catch near a stable in one case and a meat market in the other.

This album is accompanied by a series of vials in which actual specimens of the four life stages of the fly and of the *Culex* and *Anopheles* mosquitoes are mounted in carbol-agar so that the pupil may study them for himself and learn to recognize them in the back yards and pools near his own home.

During the past half year (Jan.-June, 1913) these albums went to ten High Schools and twenty-two Elementary Schools in the city

and were used by 52,610 children. The general method pursued by the teacher is to go over them pretty thoroughly in the higher grades and then to bring them into the general assembly hall where a talk is given upon them and where they are often left for inspection for a considerable period. The time for which one of the albums is kept in a school varies from eight weeks to four months, and our distributing agent reports that "once a teacher gets an album, she will not release it until her children have seen it several times, and until the other children in the school have seen it."

All this is, of course, only a beginning of what we may hope to do, even for the High Schools. We have as yet scarcely touched the great underlying problem of the Elementary Schools where it is most vital that a sound basis should be laid for healthy living and where at present (in New York City) fifteen minutes a week is the maximum time that can be spared for theoretical instruction in hygiene. We do feel, however, that we have done enough to show that museum methods of instruction may be made of use in the teaching of school hygiene and sanitation. President Osborn of the American Museum, in speaking of its general educational work has said: "Already the child can see here what Aristotle dreamt of but never saw, and what Darwin and Huxley put into prophecy but did not live to see." So in our special field we may teach the child the causes of diseases which were mysteries to Pasteur and Koch. We have the opportunity to spread through the great school population of New York a knowledge of the laws of health such as Hygeia never vouchsafed to any of her devotees in any other age than ours.

THE INFLUENCE OF CHILD WELFARE EXHIBITS ON THE HEALTH OF SCHOOL CHILDREN

BY

CHARLES F. POWLISON

The Child Welfare Exhibition movement which originated with the New York Child Welfare Exhibit held in January and February, 1911, and followed by exhibits in Chicago, St. Louis, Kansas City, Buffalo, Montreal, Louisville, Providence, Rochester, Northampton, New Britain and Stamford, has among other things made a distinct contribution to the better understanding of the health needs of the Child. Not only has this been true of the various cities in which child welfare exhibits have been held, but through literature and the press there has been scattered broadcast the gospel of good health through proper care of the children.

Large numbers of so-called "Child Welfare Exhibits" have been held during the past two years, some of them semi-commercial, some of them educational exhibits held in connection with Mother's Congress meetings, State Conferences of Charities, and similar organizations, and covering some aspect of Child Welfare.

The term "Child Welfare Exhibit," however, really belongs to the exhibits which aim to bring together *all forces in the community* dealing with the welfare of the child, in the attempt to show:

Local conditions affecting the children,
What is being done for the children,
What is not being done for the children,
What ought to be done for the children.

A Child Welfare Exhibit of this sort differs from a specialized exhibit on housing or tuberculosis in that it requires the coöperation of an entire community to make it a success. The working out of this coöperation is as much a part of the work of the exhibit as is the actual display.

A community is ready for a Child Welfare Exhibit when there is a united conviction among the leading social workers (including those interested in education, health and recreation as well as in philanthropy) that there are certain definite facts in their possession with which the public should be acquainted. This does not necessarily mean a thorough city survey but must imply knowledge of definite conditions, laws affecting them, and desired improvements. Without the consciousness of a message based on such knowledge, an exhibit is a waste of time.

A child welfare exhibit is a graphic presentation by means of photographs, tables, models, mechanical devices, mottoes, diagrams and charts, moving pictures, lantern slides and demonstrations, of the controlling influences at work upon the vast multitude of the city's children. There are shown the opportunities and also the handicaps through which they gain or miss health: Recreation, vocational adjustment, civic training, preparation for home-making, moral and spiritual development. The fields covered by committees of inquiry include homes, schools, churches, libraries, museums, stores, factories, streets, parks, playgrounds, theatres, associations, clubs, settlements, institutions, reformatories and courts, prenatal care, feeding and clothing.

Health conditions have naturally occupied a prominent place in these child welfare exhibits. The value of pure air, clean milk, wholesome food and hygienic requirements is brought home to the spectator in forceful ways. One of the characteristics of an effective child welfare exhibit is the clearness and simplicity with which health facts are presented so that even a child can understand them. The exhibit stands between the expert with his technical phraseology and the people with their need of his science, and gives them the message of the expert in terms they can understand. Thus: Little Mildred Morthost, eleven years of age, a pupil in the Sixth Grade of the Schools writes, a week after the Rochester Exhibit closed:

"The thing that took my interest was the different cares and diseases of the babies that they are apt to get when they are young and it will help me very much during vacation as I am going to take care of the baby."

Here is a definition of a Child Welfare Exhibit from Ralph N., a Fifth Grade pupil ten years of age:

"Do you know what the Child Welfare Exhibit is for? Well if you do not know what it is for I will tell you. It is for the child to know better and keep the house clean, for a dirty house is a terrible house to live in and most every disease comes from a dirty house, especially tuberculosis. We found out over at the Armory that when you get tuberculosis it keeps eating at your lungs and only fresh air will kill tuberculosis."

The influence of the New York Child Welfare Exhibit upon the health of school children may in part be estimated by the fact that, as a result of the Exhibit, New York City increased its appropriation to the Division of Child Hygiene of the Health Department by \$167,705.00.

Neighborhood Child Welfare Exhibits on Health have since been organized and held in the congested sections of Greater New York. Of them, Dr. C. Ward Crampton, Director of Physical Training, writes that these exhibits have been of the greatest usefulness. He further states that they have had their effect upon more favorable considera-

tion of budget expense for officers for educational hygiene, and that parents are more interested in the health of their children. "The preliminary survey of neighborhood forces for child welfare made by your association permits it to organize these forces and to put them into effective operation without waste or friction and with admirable effect. The exhibits bring home to living people the problems of their lives and do much to happily solve them. They are well planned, excellently administered and bring about valuable and lasting results."

The legends in these health exhibits are in Italian and Yiddish as well as in English, according to the locality in which the Exhibit is held. The following letter from Miss Isabel Stevenson, at the time in charge of School Work of the Aguilar Branch of the New York Public Library, indicates the valuation the neighborhood itself placed upon one of the Exhibits:

"*First*, the Exhibit brought together the people—teachers, principals, physicians and settlement workers, who can accomplish by a sympathetic correlation, a vast amount of good among the residents of the neighborhood. Thus, it seems to me, a bond of neighborliness has been formed among the people who should count in the everyday welfare work of the district.

"*Secondly*, the people for whom the exhibit was intended, 'the submerged tenth' came in large numbers. They came not once but many times. These people were attentive while the lectures were being given, and cordial in their appreciation of the moving pictures and 'entertainment' features. This general attitude of earnest attention from the nightly audiences proved the real interest which prompted the visits to the Exhibit.

"From the teachers and children themselves, I have heard accounts of the afternoon sessions. The children have over and over again described the moving pictures and repeated phrases which appealed to them in the lectures. Thus, many adults who were unable to attend the sessions will hear of the tuberculosis cures, the nursing stations and the necessity for pure milk. Since in many families the older sisters and brothers care for the younger children, the directions and simple health hints given by the doctors who lectured will mean better and more intelligent care for hundreds of babies.

"Miss Brangan, Principal of Public School 172, with whom I talked Friday, said: 'The exhibit was a decided success.' I agree most heartily with Miss Brangan's statement. The exhibition was a very large piece of leaven indeed.

"I trust this work may be continued until the entire city has caught the vision of child welfare."

Raymond D. Fosdick, ex-Commissioner of Accounts, after visiting one of the exhibits wrote as follows:

"I have become much interested in the work of your organization for I believe that back of hundreds of the inmates of our penal and charitable institutions is the history of an innocent child robbed of a healthy, happy, normal childhood.

"It is a distressing fact that many of the children of New York are doomed through no fault of their own to lives that will be a burden rather than asset to the city all because their parents, many of whom are of foreign birth, are ignorant of the simple knowledge of how to protect their children against the local forces of physical and moral destruction.

"The Neighborhood Child Welfare Exhibit, a number of which your Committee is organizing, is a remarkably effective way to get this instruction before the fathers and mothers of the congested communities. I had an opportunity last night to observe this at your Greenwich Village Italian Neighborhood Child Welfare Exhibit on Health. The deep interest of the 1,500 people gathered there, mostly Italians, impressed me very much. You are doing a splendid work."

Dr. W. E. Burghardt Du Bois, Editor of the *Crisis*, writes:

"I can conceive of no possible work of social reform of more importance to the American negro and particularly to colored people in a city like New York than yours. I was very much interested in your exhibit in the San Juan Hill district and wish that I had been able to do more. I trust that you will continue the work among the colored people and will take especial pains to learn their peculiar difficulties in the healthy rearing of children."

Mr. John E. Wade, a principal in one of the New York schools, writes:

"We are very much pleased with the success of our Neighborhood Child Welfare Exhibit. The Italian fathers and mothers of Old Greenwich Village came in thousands to see the panels and charts and to receive the simple instruction in child care.

"Child Welfare proved a common basis upon which all of us in the neighborhood could work in complete accord and as a result we all know each other better now, thereby making community work in the future easier.

"As a direct result of the Exhibit a school lunch has been opened in our building. We made quite a point of this need at the time of the Exhibition. A luncheon costing a few cents is now possible for hundreds of our children who previously went without the noonday meal, a hardship that is responsible for much of the under-nourished condition of some of our children."

Similar Neighborhood Exhibits have also followed the large exhibits in Chicago and St. Louis.

Mr. E. W. Murphy, Assistant Superintendent of Schools Chicago writes concerning the Chicago Child Welfare Exhibit:

"The Exhibit was a great educational force. Thirty thousand children of the public schools took part. These children represented every school in the system. Their work not only advertised to the public the work of the schools, but brought to the exhibit parents from all classes of the population, thus bringing the lesson of the exhibit home to many people who would not otherwise have attended.

"The great result has been an increased interest on the part of the public in all measures or suggestions with reference to the betterment of conditions surrounding city children. No definite accomplishments can be pointed to. There has been a rapid increase in the development of open window rooms, bathing beaches, playground activities and ventilation of homes and school rooms."

Dr. James Stewart, Supervisor of Hygiene of the Board of Education of the City of St. Louis, Mo., writes as follows:

"It is my opinion that the Child Welfare Exhibit which was held in this city May, 1912, has been a great aid in bringing to the parents of the children of this city a realization of what has been done for their children, what is being done for their children, and what can be done for their children. It was indeed very pleasing to see the interest manifested by the people who visited the exhibition. Many of them throughout the city knew nothing of the special work that was being done in every way, for the upbuilding of health, and morals, and for the education of the children in this city.

"I know that in the Department of Hygiene, we have met with fewer obstacles since this exhibit than before it. It gave us an opportunity to show the public exactly what the Department of Hygiene was intended for, and it came to St. Louis at a very opportune time. We are still feeling the benefits. We have found the parents more ready and willing to meet us half way in securing physical relief for defective children, as they have been shown the inestimable value of physical perfection in the progress of children, not only in the school, but in after life as well."

Dr. Henry Enos Tuley, Secretary Mississippi Valley Medical Association, writes from Louisville, Ky., as follows:

"I take pleasure in returning to you the questionnaire with the questions answered as far as possible for me to do so. I believe without a question the beneficial effects of the Child Welfare Exhibit in Louisville have been far reaching. This is particularly the case in regard to pure

milk, both of the Babies Milk Fund Association and along the lines of pure food."

The following is the "questionnaire" with his replies:

QUESTIONNAIRE FROM THE NATIONAL CHILD WELFARE EXHIBITION COMMITTEE,
200 FIFTH AVENUE, NEW YORK CITY.

1. Since the Child Welfare Exhibit held in your city, have you noticed any appreciable betterment in the health of your children, as the (a) direct, or, (b) indirect result of the Exhibit? Yes.
2. Have any new school buildings been obtained, as the result—direct or indirect—of the Child Welfare Exhibit; or have any old buildings been remodeled? Million dollar bond issue for school buildings and enlarged playgrounds to be voted on in November.
3. Have you noticed any better compliance with existing laws, relative to health and hygiene, since the Exhibit was held? I think so decidedly.
4. Has there been any direct and substantial increase in the appropriation fund of your city devoted to child hygiene, as the result of the Exhibit? No.
5. Has the number of medical inspectors or nurses been increased, as the result of the Exhibit? No.
6. Has the Exhibit insured a better supply of pure milk for babies and children? Yes.
7. Has any decrease of infant mortality been noted as the result of the Child Welfare Exhibit? Indirectly—to better milk and home instruction directly.
8. Have you noticed any mental improvement among the school children as the result of their bettered physical health? I think so.
9. Has the Exhibit had the effect of lessening the opposition, in certain quarters, to the work of health officers? For example, is there greater willingness, on the part of parents, to permit vaccination, the removal of adenoids, diseased tonsils, etc.? Have more children been sent to dental clinics? Yes.
10. Has not the Exhibit had the effect of illustrating to parents the necessity of helping and caring for defective children more carefully than formerly? Yes.
11. Have any new laws been enacted since the Exhibit which seem to result in any way from it? No.
12. Has not the Exhibit had the effect of stimulating greater interest in the general health of the children on the part of (a) parents and guardians, and (b) school teachers? Yes.
13. Has the Exhibit had the general effect upon the public of increasing the interest in the health of school children? Yes.
14. Has the Exhibit had the effect of impressing upon parents and guardians the necessity of pure air, open windows, increased bathing, clean water, care in the selection and preservation of food, etc.? Yes.
15. Have you noticed any increased receptivity, on the part of the public, to these ideals; and any added tendency, on their part, to support such changes as may be introduced by way of improving existing conditions? Yes.

16. Has the Exhibit, in your estimation, had the effect of forcing parents to realize what has been done for their children; and how much more might yet be done—did the right conditions permit? Yes.

17. Have you noticed any beneficial results, other than those above mentioned? If so, will you kindly detail them?

From the City Hall, Montreal, comes the following communication:

"Mr. Silver, Superintendent of Schools, Montreal, Canada, has forwarded your letter of the 11th inst. asking for an appreciation of the Child Welfare Exhibit in Montreal, to the Health Department. In answer to this inquiry I may state that the Child Welfare Exhibition has certainly had very good results in bringing about a better observance of hygiene in this city. 267,800 persons visited the Exhibition which taught them a great lesson on hygiene and the children seemed to take much interest in it. I have no statistics to show what the influence of this Exhibition has been on the health of the school children, but I may say that our medical school inspectors report much improvement in their condition. I consider this Exhibition has brought about a better observance of the rules of Hygiene and has educated the young of this city along hygienic lines."

From a smaller city, Northampton, Mass., comes the following interesting testimony:

"The Child Welfare Exhibit held in this city in January, 1912, brought about at least four results in improving the health of school children. Three of these are specific the fourth somewhat indefinite, but still I consider it very real. There were undoubtedly other important results which have not come to my knowledge.

First—A dilapidated school building in doubtful sanitary condition, located in section of the city inhabited by foreigners was photographed and the pictures exhibited on screens. I had discussed the condition of this building in several annual reports but nothing has been done to improve conditions. As a result of the publicity afforded by these pictures, the building has been replaced by a first-class school house.

Second—The people of the city have become very appreciative of the value of playground apparatus, and have bought tickets to school entertainments given for the sake of raising money to equip our schoolhouse yards with such apparatus. All of our grammar schools are well supplied at present. Some work along this line had been done before the exhibit, but I am sure that interest was awakened as a result of what was said and done at that time.

Third—We have been able to employ a school nurse. Previously, we had the services of a district nurse for a few half-days each week.

Fourth—There is an increased general interest in the subject of the health of school children brought about largely, I think, by the following exhibits:

Photographs of school physician and district nurse at work in the schools.
Photographs of school children receiving instruction in treating emergencies.
Charts showing the scope and methods of medical inspection in the schools.
Exhibits of text books on hygiene used in grades four to nine.
Demonstrations of the work of the supervisor of physical training.
Trusting that this information will be of service to you I remain,

Yours very sincerely,

(Signed) F. K. CONGDON,
Supt. of Schools."

Child Welfare Exhibits link science, the home, the school and the municipality in the attempt to better the child's physical and moral condition. Effective as these Exhibits have proven to be it is believed that with the formation of the National Child Welfare Exhibition Committee to conserve the valuable experience of past Exhibits, that future exhibits at less cost can be made doubly successful. The Committee is now engaged with the coöperation of the national organizations and experts in the preparation of exhibit material in standardized form which with competent organizers will be available for such communities as may wish to adopt this means of popular education. But it is to be urged that such material be made only the nucleus around which setting, local conditions shall be shown and local applications or legislative remedies advocated.

HILFSSCHULWESEN UND HEILERZIEHUNGSANSTALTEN FÜR PSYCHOPATHISCHE

VON

EUGEN BORCHARDT

Es ist jetzt fast genau 50 Jahre her, seit der Idiotenlehrer Stötzner zu Leipzig in einem 1864 erschienenen Schriftchen darauf hinwies, dass es unter den Kindern der Bürgerschulen stets eine Anzahl schwach begabter und geistig minderwertiger Individuen gäbe, die im Normalunterricht durchaus nicht gefördert werden könnten; solche Menschen liefen im späteren Leben aus Mangel an Kenntnissen und an innerem Halt Gefahr, mit den Strafgesetzen in Konflikt zu kommen oder sonst irgendwie der Gemeinschaft zur Last zu fallen. Er knüpft daran den Vorschlag, diese gefährdeten Kinder in besonderen sogenannten Hilfsschulen unterzubringen, sie dort von besonders veranlagten Lehrern nach einem ihrer geistigen und seelischen Beschaffenheit angepassten Plan zu unterrichten und zu erziehen und sie so bis zu einem gewissen Grade erwerbsfähig und zu halbwegs nützlichen Mitgliedern der menschlichen Gesellschaft zu machen.

Der Gedanke fand überall lebhafte Anerkennung, und alsbald wetteiferten die Städte in der Errichtung solcher Hilfsschulen, zwar zuerst nur in Gestalt einzelner Klassen, später aber auch wirklicher selbständiger Schulen in eigenen Häusern. Auch die preussische Regierung beobachtete sorgfältig diese Bestrebungen; sie erkannte 1892 ausdrücklich die Hilfsschulen als vollgültig an und machte 1905 unter voller Würdigung der bisherigen Leistungen selbst sehr wichtige und vortreffliche Vorschläge für ihren inneren Ausbau. Zugleich wurden auch statistische Erhebungen über die Entwicklung des Hilfsschulwesens in die Wege geleitet und aus ihnen ergibt sich nunmehr folgender Stand der Dinge:

1893 hatten	37 Städte	110	Hilfsschulklassen mit	2,300 Schülern
1903	"	135	"	" 10,600 "
1913	"	310	"	" 38,000 "

Dieser sehr erfreuliche Aufschwung entspricht aber noch lange nicht dem wirklichen Bedürfnis: Vielmehr haben die Forschungen von Aerzten und Pädagogen erwiesen, dass in ganz Deutschland die Zahl der schwachbegabten Schulkinder etwa 1% bis 1.5% der Elementarschüler beträgt, d. h. dass es sich um rund 120,000 Kinder handelt, die der Segnungen eines Sonderunterrichts bedürfen!

Wodurch fallen nun diese Kinder unter ihren Altersgenossen in der Normalschule auf? Sehr häufig zeigen sie schon rein äusserlich betrachtet eine mangelhafte körperliche Entwicklung und Reste konstitutioneller Erkrankungen. In ihrem Wesen sind sie entweder gleichgültig und stumpf oder nervös aufgeregt, übermässig lebhaft, laut und geschwätzig. Ihre geistige Auffassungskraft ist gering: Sie nehmen Eindrücke nur ungenau und unvollständig wahr und sind nicht imstande, genau und anhaltend aufzupassen. Ebenso ist ihr Gedächtnis schwach und eine Fähigkeit zum abstrakten Denken kaum vorhanden. Endlich ist sehr charakteristisch für sie ihre Willensschwäche, infolge deren ihre zeitweisen Anstrengungen immer wieder erlahmen.

Allerdings ist dieses eben entworfene Bild nicht immer in seinen Einzelheiten von vornherein deutlich und erkennbar. Es kann vielmehr oft längere Zeit vergehen, ehe erkannt wird, dass es sich bei solchen Individuen nicht um einen geringeren Grad geistiger Leistungsfähigkeit infolge körperlicher Schwäche und um eine gewisse Schwerfälligkeit handelt, sondern dass hier ein ausgesprochener „Defekt“ vorliegt, eine abnorme Vernalagung des Intellekts, des Fühlens und Wollens, die höchstens Aussicht auf eine gewisse Milderung, nie aber auf völliges Verschwinden darbietet. Darum besagt die ursprüngliche Vorschrift, dass der Aufenthalt in der Normalschule versuchsweise zwei Jahre dauern soll! Doch kann und soll in offenkundigen Fällen die Ueberweisung in eine Hilfsschule schon viel früher stattfinden, wenn nämlich das Kind in seinen geistigen Fähigkeiten etwa zwei Jahre hinter seinem tatsächlichen Alter zurück erscheint und ein ärztliches Gutachten die schwache Begabung bestätigt. Eine praktische Neuerung haben wir seit einigen Jahren in Charlottenburg: Bei uns werden gleich bei der Anmeldung solche Kinder, die dem Rektor der Schule aus geistigen oder körperlichen Gründen noch nicht schulreif erscheinen, dem Schularzt vorgestellt und bei Bestätigung des Verdachtes für ein halbes bis ein Jahr einem städtischen Kindergarten, überwiesen. Dort wird ihnen Gelegenheit geboten, ihren Körper bei Spiel und Ruhe in guter Luft zu kräftigen, Fehler und Gebrechen, so gut es geht, nach ärztlichem Rat auszugleichen, und Geist und Gemüt bei einem Unterricht nach Fröbelscher Methode zu bilden und zu kräftigen. Ist letzteres in einzelnen Fällen nach dem Urteil der Leiterin des Kindergartens und Bestätigung desselben durch den Schularzt nicht gelungen, so haben wir die Möglichkeit, diese Kinder gleich aus dem Kindergarten in die Hilfsschule zu empfehlen, so dass die unnütze Plage der Normalschule für sie ganz in Fortfall kommt, und die Normalschule selbst von dieser toten Last befreit bleibt. Unsere Erfolge mit diesem Verfahren sind durchaus ermutigend.

Die eigentliche Ueberweisung darf nur auf Grund einer genauen

und eingehenden Prüfung durch eine besondere Kommission erfolgen, der ein Schulaufsichtsbeamter, der Leiter der Hilfsschule und der Schularzt angehören. Nicht aufgenommen werden von vornherein solcher Kinder, die moralische Defekte zeigen, ferner Epileptiker, Taubstumme, Blinde, Schwerhörige, Schwachsinnige höheren Grades und Idioten. Für derartige Kinder sind noch andersgeartete Schulen oder geschlossene Anstalten vorhanden. Bei den sonstigen zur Uebernahme vorgeschlagenen Kindern erstreckt sich die Prüfung auf das eigentliche Schulpensum, d. h. Rechnen, Lesen, Schreiben, ferner auf die Fähigkeit, sich in Raum und Zeit zurechtzufinden, die Kenntnis von der Verwendung der Gegenstände des täglichen Gebrauchs, ferner die Geschicklichkeit in der Wiedergabe kleiner Erzählungen, endlich auf die Raschheit der Auffassung und Lösung kleiner Denkaufgaben. Ganz ausgezeichnete Dienste leistet dabei die Prüfungsmethode nach Binet, dessen Testserien für die einzelnen Jahre den normalen geistigen Entwicklungsgang vom. 3. bis 12. Lebensjahr festlegen. Man kann durch sie also mit annähernder Sicherheit konstatieren, welchem Lebensalter die Intelligenz des Zöglings entespricht, wie weit er demnach hinter seinem wirklichen Alter zurückgeblieben ist. Während dieser Prüfung hat der Schularzt Zeit und Gelegenheit, wenigstens stark in die Augen fallende körperliche Mängel, z. B. Wachstumsstörungen, Skrofulose, Behinderung der Nasenatmung, rachitische Veränderungen usw. festzustellen.

Die Kinder, die bei einer solchen Prüfung versagen, werden als hilfsschulreif erklärt und in die Hilfsschule überführt. Dazu bedarf es nicht erst der Zustimmung der Eltern. Denn die Hilfsschule ist nach einer Entscheidung des höchsten Gerichtshofs aus dem Jahre 1906 als ein Teil der öffentlichen Volksschule anzusehen, so dass unter Umständen zwangsweise Einführung erlaubt ist. Doch hat das anfängliche Widerstreben der Eltern gegen die „Dummschule“ schon einer besseren Einsicht Platz gemacht.

Bald nach ihrem Eintritt in die Hilfsschule werden die Kinder einer gründlichen Beobachtung und Analysierung ihrer körperlichen und geistigen Defekte nach Ursache und Wesen unterzogen. Sehr wichtige Aufschlüsse gibt dabei in erster Reihe die Erforschung der Familienverhältnisse der Zöglinge, namentlich in Bezug auf erbliche Belastung: Da findet man denn nach Leubuscher, dass in 36% der Fälle beide Eltern oder ein Ehegatte, zumeist der Vater, psychopathisch oder neuropathisch sind. Und besonders interessant ist die Feststellung, dass in mehr als 50% auch die Geschwister der Hilfsschulkinder Störungen auf geistigem und nervösem Gebiete zeigen, so dass in recht vielen Fällen mehrere Kinder ein und derselben Familie nach- oder miteinander die Hilfsschule besuchen. Eine Vererbung im weiteren

Sinne liegt vor, wenn die Keimanlagen schon im Elternkörper geschädigt waren, z. B. bei Alkoholismus (in mehr als 40%), Bleiintoxikationen und Syphilis. Die keimvergiftende Rolle der elterlichen Tuberkulose ist in Bezug auf den Schwachsinn der Kinder noch strittig. Dagegen dürfte wohl ausgedehnte Inzucht, ferner ein sehr grosser Altersunterschied der Eltern, ihre zu grosse Jugend oder zu hohes Alter, Erschöpfung der Mutter durch zu häufige Geburten, endlich auch Unterernährung in gewissem Grade zu bewerten sein.

Wichtig sind auch die Schädigungen, die den werdenden kindlichen Organismus im Mutterleibe betreffen: Auch hier wieder Trunksucht der Mutter; in seltenen Fällen Morphinismus; oder frische Infektion mit Syphilis. Dagegen ist zweifelhaft und zum mindesten noch nicht genügend geklärt ein etwaiger Zusammenhang mit schweren Verletzungen der Schwangangeren, ferner heftigen Gemütsbewegungen z. B. der ausserehelichen Mütter und Schwere der Geburt selbst.

Nun zu den schädigenden Einflüssen, die das Kind in der ersten Jugendentwicklung treffen können: Da sind zuerst die Erkrankungen des Gehirns und seiner Häute: Meningitis cerebrospinalis epidemica, cerebrale Kinderlähmung, die akute Gehirnentzündung entweder selbständig oder im Gefolge von Scharlach, Diphtherie, Typhus, Masern; endlich schwere Gehirnerschütterungen und Schädelbrüche. Auch wären hier noch Mikrocephalie und Hydrocephalus zu erwähnen, wo Wachstumsstörungen und Drucksteigerungen des Gehirns als intelligenzschädigend mitsprechen.

Eine gewisse Rolle in der Aetiologie spielt die Schwerhörigkeit, um so mehr, als bei ihrem frühzeitigen Eintritt auch die Sprache empfindlich leidet: Hierher gehören auch die adenoiden Wucherungen im Nasenrachenraum (30–35%), durch die auch das Allgemeinbefinden—ich erinnere nur an Pavor nocturnus—ungünstig beeinflusst wird. Noch nicht ganz geklärt ist der Zusammenhang zwischen Rachitis und Schwachsinn, wenngleich es wohl wahrscheinlich ist, dass die schwereren Veränderungen am knöchernen Schädel, Craniotabes, Hydrocephalus, das Gehirn in Mitleidenschaft ziehen können.

Geringer ist der Einfluss von Sehstörungen leichterer Art, z. B. Hornhauttrübungen und Schielen.

Endlich kommt noch die Einwirkung schlechter häuslicher Verhältnisse in Betracht, z. B. Unterernährung durch Arbeitsmangel der Eltern, sowie allgemeine Verwahrlosung in körperlicher und sittlicher Beziehung durch ungenügende Körperpflege und durch das schlechte Beispiel bei den Erwachsenen.

Noch ist des vereinzelt Vorkommens leichterer Fälle von infantilem Myxödem, sowie von Mongolismus zu erwähnen, die gerade noch auf der Grenzlinie zur Idiotie stehen.

Diesen eben ausführlich genannten mannigfachen Ursachen für den Schwachsinn unserer Hilfsschulzöglinge entspricht logischerweise das bunte Bild des körperlichen Befundes. Dabei ist zu betonen, dass bei den meisten Kindern eine ganze Anzahl solcher schädigenden Momente zusammentreffen, und demgemäss auch eine Vereinigung mehrerer Symptome vorhanden ist. Eine Aufzählung der einzelnen Krankheitsformen erübrigt sich wohl nach dem vorher Gesagten. Doch muss bemerkt werden, dass z. B. wirkliche tuberkulöse Lungenaffektionen und Herzfehler verhältnismässig selten sind, dagegen Zeichen von

	Rachitis bei ca	50%
	Schwerhörigkeit	" 27%
	Blasses Aussehen und Blutarmut	" 47%
Chronischer Katarrh der Nase und des Rachens	"	21%
Sprachgebrecen	"	19% vorkommen (Schmidt-Bonn)

in Körpergrösse und Körpergewicht bleiben etwa 52% unter dem Durchschnitt.

Alle diese ebenso wichtigen wie interessanten Angaben, d. h. Anamnese, Befund in geistiger und körperlicher Beziehung, sowie die weitere Entwicklung des Kindes in der Schule selbst und seine Leistungen werden vereinigt in einem sogenannten Personalbogen, der für jedes Kind gleich bei seinem Eintritt in die Hilfsschule angelegt wird. Das Formular ist nach vielfachen Versuchen kürzlich festgelegt und enthält noch einige Rubriken über die Schulzeit hinaus bis zur Militärpflichtigkeit. Die Eintragungen werden vom Schularzt und Schulleiter vollzogen, so dass das ganze Lebensbild des Zöglings aufgerollt ist. Mit Recht wird deshalb diesem Personalbogen ein grosser Wert für die künftige Beurteilung des Menschen in seinen Beziehungen zum öffentlichen Leben beigemessen, besonders wenn er mit der öffentlichen Gerichtsbarkeit in Berührung kommt. Ein Erlass des Preussischen Justizministers ordnet ausdrücklich an, dass in gewissen Fällen bei den Heimatsbehörden nach einem etwa vorhandenen Personalbogen gefahndet werden soll. Noch wichtiger fast ist der Personalbogen in den Ländern mit allgemeiner Wehrpflicht, wenn man bedenkt, welch unabsehbares Unglück über ein solches armes Menschenkind kommen kann, sobald es in seiner Willens- und Verstandesschwäche Verstösse gegen die Dienstvorschriften begeht und vor die so überaus strenge Militärjustiz gestellt wird. In weiser Vorsorge muss deshalb nach kriegsministeriellem Erlass alljährlich ein kurzer Bericht über jeden Hilfsschüler an die Ersatzkommission geschickt werden, der einen kurzen Auszug der charakteristischen Punkte aus dem Personalbogen enthält. Endlich wird der Personalbogen bei der Berufswahl zu Hilfe genommen werden müssen, damit der Lehrherr sich ein Bild von dem ihm anvertrauten jungen Menschen machen und sein ganzes Verhalten betreffend Anfor-

derungen und Behandlung danach einrichten kann. Auch da, wo Hilfsschulen noch nicht existieren, z. B. in ländlichen Bezirken, wird ganz neuerdings die Anlage von Personalbogen für besonders schwachbegabte Kinder zu obigen Zwecken gewünscht. (Regierungsverfügung Minden 1913.)

In welcher Weise nimmt sich nun die Hilfsschule ihrer Zöglinge in Bezug auf Unterricht, Erziehung und körperliche Fürsorge an?

Der Unterricht in der Hilfsschule verteilt sich auf 6 Jahre, von denen je 2 auf die Unter-, die Mittel- und die Oberstufe kommen. Die Zahl der Schüler jeder Klasse soll, um eine individuelle Behandlung durchzuführen, möglichst nicht 20–24 überschreiten. Ferner kann Koedukation bestehen; Nachteile sind bisher nicht beobachtet worden.

Die Zahl der wöchentlichen Unterrichtsstunden soll höchstens 26 einschliesslich Handarbeit betragen; keinesfalls dürfen mehr als 4 Stunden täglich zum Lernen verwendet werden, auch soll nach $\frac{1}{2}$ - bis $\frac{3}{4}$ -stündiger Lernarbeit regelmässig eine kleine Erholung oder freiere Beschäftigung eintreten.

Als Unterrichtsfächer kommen hauptsächlich diejenigen in Betracht die für die Betätigung in einfachen Verhältnissen unentbehrlich sind, also Lesen, Schreiben, Deutsch, Rechnen und Anschauungsunterricht; in letzteren können Erdkunde, Geschichte und Naturgeschichte zwanglos eingegliedert werden.

Der Religionsunterricht muss sich in engen Grenzen halten, da die Aufnahmefähigkeit der Kinder für solche Stoffe, die zum Abstrakten binneigen, ja nur sehr beschränkt ist.

Es würde zu weit führen, hier auf Einzelheiten bei jedem dieser Lehrfächer einzugehen. Auch „hat die Aneignung von Kenntnissen im allgemeinen zurückzutreten gegen die eigentliche Erziehung, die Anleitung des Kindes zum Guten, die Anregung und Pflege seines Gemütes, die Gewöhnung an gute Sitte und Ordnung. Neben der Erziehung verlangt aber auch die Vorbildung der Erwerbsfähigkeit bei diesen Kindern, die meistens in hohem Masse auf diese angewiesen sind, eine weitgehende Berücksichtigung.“ (Erlass des Kultusministers vom 2.1.1905.) Deshalb gesellt sich als wichtige Ergänzung zu den vorhergenannten Unterrichtsfächern der Handfertigungsunterricht hinzu. Sein besonderer Wert liegt darin, dass er bei den meist auch körperlich nicht vollwertigen Kindern das gestörte Muskel- und Nervensystem günstig beeinflusst. Auch unterstützt er wirksam die Auffassung und das Verständnis, indem da, wo Auge und Ohr nicht sicher arbeiten, der Tastsinn ergänzend einspringt. Dadurch findet eine Ordnung der Sinneszentren, eine Erstarkung des Begriffszentrums und eine Ausschleifung der Nervenbahnen statt, die eine gewisse Befestigung des Erlernten gewährleisten (Raatz). Schliesslich ist auch der

erzieherische Wert sehr gross, denn die Freude am Werdenden regt sicher den Willen und die Anstelligkeit erheblich an, und die Erziehung zur Arbeit steuert einer der schlimmsten sozialen Krankheiten, der Arbeitsscheu!

Noch mehr ins Gebiet der Erziehung gehört der Sprachunterricht (Artikulationsunterricht), der bei der grossen Zahl von stammelnden und stotternden Kindern fast einem reinen Sprachheilunterricht gleichkommt.

Aehnlich ist es mit dem Ableseunterricht bestellt, der bei solchen Schwerhörigen, bei denen ein ärztlicher Eingriff keine Besserung mehr erzielen kann, vorhandene Gehörreste unterstützt und die Fähigkeit, Gesprochenes zu verstehen, erhöht.

Das greift nun schon in die Domäne des Schularztes hinüber, dessen Mitarbeit nach allem, was vorher über den engen Zusammenhang zwischen körperlicher und geistiger Minderwertigkeit gesagt ist, bei jeder Hilfsschule unentbehrlich erscheint. Der Funktion des Schularztes bei der Aufnahmeprüfung und bei der Einrichtung des Personalbogens ist schon gedacht worden. Aber mit dieser gutachtlichen und statistischen Tätigkeit ist die Möglichkeit und die Notwendigkeit seines Eingreifens noch nicht erschöpft. Vielmehr muss der Hilfsschularzt noch in weit höherem Masse wie in der Normalschule seine Pfleglinge während der ganzen Schulzeit unter ständiger Kontrolle halten: Hier wird die Entfernung der adenoiden Wucherungen zu empfehlen sein; dort das Tragen einer Brille; anderswo die Beseitigung eines Ohrenleidens, noch anderswo für orthopädischen Turnunterricht Sorge getragen werden müssen, der bei den muskelschwachen und rachitischen Kindern oft sehr nottut. Besonders aber hat die ärztliche Fürsorge dahin zu gehen, geeignete Kinder für Ferienkolonie, Landaufenthalt und Waldschule auszusuchen und womöglich auch auf besondere Speisung unterernährter Kinder aus traurigen Familienverhältnissen hinzuwirken. Schliesslich sollte der Schularzt auch ein gewichtiges Wort bei der Berufswahl mitzureden haben, um den häufig törichtten Wünschen der Eltern zu begegnen, durch deren Ausführung unabsehbarer Schaden gestiftet werden würde.

Ob der Hilfsschularzt im Hauptamt oder im Nebenamt anzustellen ist, ob er auch behandeln soll oder nicht, das sind noch ungelöste Streitfragen. Das aber ist sicher, dass der Hilfsschularzt bei der hohen Verantwortung, die ihm in seiner Entscheidung über die ganze Bildungsmöglichkeit und damit über die Lebensstellung eines jungen Menschenkindes obliegt, eine besondere spezialistische Vorbildung auf dem Gebiet der Psychiatrie und der Nervenkrankheiten haben muss. Dieser Grundsatz wird jetzt wohl auch fast überall bei der Anstellung durchgeführt.

Eine ganz ähnliche Forderung wird auch für die Hilfsschullehrer aufgestellt, und zwar bemerkenswerterweise aus ihren eigenen Kreisen heraus. Man kann ihnen nur zustimmen, dass ein besonderes heilpädagogisches Studium für sie nötig und dringend zu empfehlen ist.

Durch ein dauerndes, verständnisvolles Zusammenwirken solcher spezialistisch vorgebildeten Pädagogen und Aerzte werden künftig vielleicht noch bessere Resultate erzielt werden wie jetzt. Vorläufig kann man sagen, dass nur

etwa 70% der Kinder völlig erwerbsfähig

“ 22,7% nur teilweise “ werden

und immer noch “ 5,33% auch trotz so sorgfältiger Vorbereitung schliesslich für die erfolgreiche Mitarbeit im Leben der Gemeinschaft verloren gehen! (Schmidt-Bonn)

Namentlich die letzteren Tatsachen haben dazu beigetragen, dass sich an vielen Orten Fürsorge-Vereine für die schulentlassenen Hilfsschüler gebildet haben, die diese bei der Berufswahl und Unterbringung in Stellungen unterstützen, ja sogar an Handwerksmeister für Einstellung und Ausbildung ehemaliger Hilfsschüler besondere Prämien vergeben.

Auch werden an den Fortbildungsschulen schon hier und da besondere Klassen für diese jungen Leute gebildet, um nichts unversucht zu lassen, sie auch in den wichtigen Jahren bis zur Mündigkeit noch geistig und moralisch zu überwachen und zu fördern.

Gelingt es so, zu erzielen, dass von der verhältnismässig grossen Zahl geistig minderwertiger Kinder nur eine möglichst geringe Zahl sozial minderwertiger Erwachsener übrig bleibt, so hat die Hilfsschule ihre Bestimmung voll und ganz erfüllt.

Nr. des Hauptbuches _____

Hilfsschule in _____
 mit _____ aufsteigenden Klassen.

Personalbogen

_____ d. _____ Hilfsschüler _____
 geboren am _____ in _____, Konfession, _____
 Sohn d. _____, Stand _____, Konfession, _____
 Tochter _____
 aufgenommen in die Hilfsschule am _____ 19 _____

I. Vor der Hilfsschulzeit.

(Unter Mitwirkung des Schularztes aufzustellen.)

- a) Häusliche und wirtschaftliche Verhältnisse der Eltern: Wohnung, Familienleben, Ordnung und häuslicheucht, Einkommen, Sorge des Vaters für die Familie, hausväterlicher Sinn der Mutter und ähnliches.
- b) Erbliche Belastung durch Geistesstörung, Nerventraktheit, Syphilis, Tuberkulose, Trunksucht, Verbrechen der Eltern (Voreltern), Blutsverwandtschaft der Eltern, uneheliche oder voreheliche Geburt.
- c) Zahl und Alter der Geschwister, ihre körperlichen und geistigen Regelwidrigkeiten.
- d) Verlauf der Geburt; Ernährung und Pflege in den ersten Lebensjahren.

Anmerkung: Der Personalbogen darf niemals dem Kinde oder einem seiner Angehörigen in die Hand gegeben werden. Von seinem Inhalt darf nur streng amtlich Gebrauch gemacht werden.

Verlag des Verbandes der Hilfsschulen Deutschlands, Hannover, Friedrichstr. 20.
 (Nachdruck verboten).

2

e) Beginn und Verlauf
des Lähmens.

des Gehnlernens.

der Sprachentwicklung.

f) Eigentümlichkeiten bei der Befriedigung der leiblichen Bedürfnisse, beim Spiel und im Verkehr mit andern Kindern.

g) Krankheiten und Gebrechen.

h) Unfälle.

i) Besuchte Schulen, Schuljahre mit genauer Zeitangabe.

k) Gutachten des bisherigen Schularztes und des früheren Lehrers, bezw. Hinweis auf Gesundheits- und Aufnahmebogen.

l) Kriminalität, gerichtliche Verurtheilungen.

II. Während der Hilfsschulzeit.

1. Untersuchung und Prüfung bei der Aufnahme am und im 1. Vierteljahr nachher.

A. Untersuchung durch den Hilfsschularzt.

a) Allgemeine Körperbeschaffenheit und äußere Erscheinung; Sprache.

b) Schädelmaß und Kopfförmung.

c) Sinneswerkzeuge:
Auge.

Ohr.

d) Mundhöhle und Rachen.

Nase und Rachen.

Äußere Haut.

e) Entartungszeichen und Entwicklungsabweichungen, Reste früherer Krankheiten.

f) Geistige und körperliche Krankheitserscheinungen.

B. Prüfung durch den Hilfschullehrer.

a) Aufmerksamkeit und Interesse.

b) Anschauungs- und Vorstellungsvermögen.

c) Gedächtnis, Urteilsvermögen.

4

d) Sprache.

e) Schulkenntnisse und Fertigkeiten:
Rechnen.

Lesen.

Schreiben.

C. Gefühls- und Willensfähigkeit.
(Zunächst vom Hilfsschullehrer anzufüllen.)

D. Äußerung des Hilfsschularztes zu B und C.

2. Entwicklung in der Hilfsschule.

A. Fortlaufende Beobachtungen; angewandte Mittel und ihr Erfolg.

Datum	Körperliche und geistige Entwicklung. Erziehung und Ausbildung
	1. Hilfsschuljahr. Klasse, Abteilung.

Der Hilfsschularzt

D..... Hilfsschullehrer

Datum	Körperliche und geistige Entwicklung, Erziehung und Ausbildung	
	2. Hilfsschuljahr.	..... Klasse, Abteilung.
Der Hilfsschularzt	D..... Hilfsschullehrer	
	3. Hilfsschuljahr.	..... Klasse, Abteilung.
Der Hilfsschularzt	D..... Hilfsschullehrer	
	4. Hilfsschuljahr.	..... Klasse, Abteilung.
Der Hilfsschularzt	D..... Hilfsschullehrer	

Datum	Körperliche und geistige Entwicklung, Erziehung und Ausbildung	
	5. Hilfsschuljahr.	..... Klasse, Abteilung.
Der Hilfsschularzt	D..... Hilfsschullehrer	
	6. Hilfsschuljahr.	..... Klasse, Abteilung.
Der Hilfsschularzt	D..... Hilfsschullehrer	
	7. und 8. Hilfsschuljahr.	..... Klasse, Abteilung.
Der Hilfsschularzt	D..... Hilfsschullehrer	

B. Jahreszeugnisse. (Für die Schulen, die Zeugnisse führen.)

Schuljahr	19.../...	19.../...	19.../...	19.../...	19.../...	19.../...	19.../...	19.../...
Schul- } entschuldigte								
versäumnisse } unentschuldigte								
Betragen								
Aufmerksamkeit								
Fleiß								
Religion								
Aufschauung								
Sprache								
Lesen								
Schönschreiben								
Rechtschreiben								
Aufsatz								
Rechnen								
Erkunde								
Geschichte								
Naturkunde								
Zeichnen								
Handfertigkeit								
Handarbeit								
Gefang								
Turnen								

3. Entlassung aus der Hilfsschule

- a) infolge Überweisung nach..... am..... 19..... Letzte Wohnung.....
- b) infolge beendiger Schulpflicht am..... 19..... Letzte Wohnung.....
- c) Entlassungszeugnis nebst den Angaben für die Militärbehörde:
1. Körper- und Geisteszustand (durch den Hilfsschularzt festzustellen).

2. Urteil über Gedächtnis, Merkfähigkeit, Selbständigkeit im Denken und Handeln, Grad der Erwerbsfähigkeit Orientierungsfähigkeit in der Umwelt.

3. Leistungen in der Schule:

Religion.

Rechnen.

Lesen.

Mündlicher und schriftlicher Gedankenausdruck.

4. Charakter.

III. Nach der Hilfsschulzeit.

a) Fortbildungsschule.

b) Lebensberuf.

c) Sittliches Verhalten.

d) Militärpflicht.

Nummer des Hauptbuchs: 42

Für die

Militär-Erziehungscommission!

Bericht

über Hans Lehmann, geboren den 12^{ten} Februar 1898,
zu Magdeburg

Sohn des Regimentsarzt Dr. Wolf Lehmann Straße: Kaiserplatz 11,
Schüler der Hilfsschule zu Charlottenburg vom 22. 4. 08 bis 30. 3. 1912
Abstammung und häusliche Verhältnisse:

Körperliche und geistige Entwicklung im allgemeinen: Körperlich u. geistig mangelhaft

entwickelt

Besondere Krankheiten, Fehler usw.: Rachitis etc.

Schulleistungen beim Abgange von der Schule:

Religion: _____

Lesen: _____

Schreiben: _____

Rechnen: _____

Merkfähigkeit: _____

Selbstständigkeit im Denken und Handeln: _____

Gedächtnis: _____

Charaktereigenheiten: _____

_____, den _____ ten _____ 190__

Der Schulleiter: _____

Der Schularzt: _____

(Schulkempel.)

DISCUSSION OF
EUGEN BORCHARDT'S PAPER
BY
BABETTE E. MUENCH

Dr. Borchardt has shown us in his paper what can be done for the feeble-minded child and how it can be done; also the interest which the German cities and Government take in these children and their welfare, by establishing special schools and providing these schools with especially adapted and well-trained teachers.

The careful classification of these children in regard to their individuality and ability, or rather inability, is to me most remarkable.

Listening with intense interest to Dr. Borchardt, the thought uppermost in my mind was: The Germans not only believe in the "Survival of the Fittest" but they have undertaken the task to fit even the weakest to survive, and have thus far succeeded in a marked degree, to make those poor ones, whom nature has not fully endowed, and who are suffering for the sins of their fathers, self-supporting and self-respecting, and thus keep them from coming in conflict with the law.

If this work could be carried on throughout the world, the problem of Hygiene, as well as the social problem, would be solved.

**PAPERS PRESENTED IN ABSENTIA IN SESSIONS
SEVEN, EIGHT AND NINE**

(Read by Title)

MARY ELIZABETH BATES, M.D., Denver, Colorado. "Operation of the Colorado (Bates) Law for the Examination and Care of Public School Children."

T. D. WOOD, M.D., Professor of Physical Education, Teachers' College, New York,
and

HAROLD BROWN KEYES, M.D., Physician to Horace Mann School, New York. "The Sanitation of the Rural School." Joint paper. Read by Dr. Keyes.

N. Y. BOARD OF WATER SUPPLY. "Workmen Settlement Schools, Construction Camps, Kaatskill Water Supply. Special Report."

DR. JOSÉ Y. SALOMA, Mexico City. "La Enseñanza practica de la higiene en los jardines de ninos."

ERNESTO CACACE, M.D., Professor of Pediatrics, Royal University, Naples, Director Nipio-Hygienic Institute of the Anti-Malarial Educative Station of Naples and Capua, Italy. "For the Diffusion of Anti-Malarial Instruction and Scholastic Anti-Malarial Prophylaxis in Malarial Countries."

THE OPERATION OF THE COLORADO (BATES) LAW FOR THE EXAMINATION AND CARE OF PUBLIC SCHOOL CHILDREN

BY

MARY ELIZABETH BATES

The following is the Colorado State law for the physical examination and care of public school children:

AN ACT PROVIDING FOR THE EXAMINATION AND CARE OF CHILDREN IN THE PUBLIC SCHOOLS, AND MAKING AN APPRO- PRIATION IN CONNECTION THEREWITH.

Be it Enacted by the General Assembly of the State of Colorado:

Section 1. The State Superintendent of Public Instruction shall prepare or cause to be prepared suitable test cards, blanks, record books, and other needful appliances and supplies to be used in testing the sight, hearing and breathing of pupils in the public schools, and the necessary instructions for their use; and shall furnish the same free of expense to every public school in the State. The teacher or principal in every public school, or where there is no principal, the county superintendent, shall, during the first month of each school year, test the sight, hearing and breathing of all pupils under his charge, *such examination to be made by observation without using drugs or instruments, and without coming in contact with said child*; and keep a record of such examinations according to the instructions furnished and make a written report of such examinations to the State Superintendent of Public Instruction as he may require.*

Sec. 2. Every teacher in the public schools shall report the mental, moral and physical defectiveness of any child under his supervision, as soon as such defectiveness is apparent, to the principal or, where there is no principal, to the county superintendent. Such principal or county superintendent shall promptly notify the parents or guardian of each child found to be defective, of the child's defectiveness, and shall recommend to such parents or guardian that such child be thoroughly examined as soon as possible by a competent physician or surgeon with special reference to the eyes, ears, nose, throat, teeth and spine.

If the parents or guardian of such child shall fail, neglect or refuse to have such examination made and treatment begun within a reasonable time after such notice has been given, the said principal or superintendent shall notify the State Bureau of Child and Animal Protection of the facts; *Providing, however, that whenever it shall be made to appear to the said principal or superintendent, upon the written statement of the parent or guardian of said child, that such parent or guardian has not the necessary funds wherewith to pay the expenses of such examination and treatment, the said principal or superintendent shall cause such examination and treatment to be made by the county physician of the district wherein said child resides; and it shall be the duty of such county physician to make such examination and treatment, and if he be unable to properly treat such child he shall forthwith report such fact to the county commissioners of the county with his recommendation.*

*Adapted from Dr. Frank Allport's Vermont law.

Sec. 3. The State Auditor is hereby directed to draw his order for such sums and at such times as the State Superintendent of Public Instruction may require to carry out the provisions of this act. The total expenses under this act shall not exceed one thousand (\$1,000.00) dollars in any biennial period ending November 30th.

(The provisions in italics are the only amendments, made by the Senate and concurred in by the House, to the bill as I wrote it and as it was introduced in the House by Hon. Alma V. Lafferty.)

INSTRUCTIONS*

ON

SIGHT, HEARING, AND BREATHING TESTS.

In Accordance with Chapter 203, Pages 490-491, Sections 1, 2, and 3, Session Laws of 1909.

To Superintendents, Principals and Teachers:

The examination should be made by the teacher under whose immediate observation the child is to be, and under the direction of the Principal, or where there is no Principal, of the County Superintendent.

It is to be made during the first month's attendance of the child during each school year.

Every child must be examined.

The examination must be made privately and singly.

The record blanks must be filled out with the data obtained, and kept on file. The duplicate is to be sent to the County Superintendent at the end of each school term and upon request of the State Superintendent.

CHART No. I.

DISTANCE VISION CHART—LETTERS.

Sight—

Children already wearing glasses should be tested with such glasses properly adjusted; *i. e.*, frames straight, lenses on the same level and not touching the eyelashes. The head must be held straight, not tilted, and the eyes must look through the centers of the lenses.

The Vision Chart must be kept in this envelope when not in use, as familiarity with it leads to an acquaintance with its letters. When it becomes soiled and worn, apply for a new one. Do not cover it with glass.

Place the Vision Chart on the wall in good light, side light preferred, and on a level with the child's head.

Place the child at a distance of twenty feet from the chart, directly facing it.

Examine each eye separately. Hold a card in front of and close to one eye, while the other eye is being tested.

Press the card against the nose, but not against the covered eye, as pressure on the eye will induce an incorrect result.

Have the pupil begin at the top of the chart and read aloud down as far as he can; first with the right eye from right to left and then with the left eye from left to right.

The line marked 20 should be seen and read at a distance of twenty feet if the child has normal vision.

*All instructions and tests arranged by Dr. Mary Elizabeth Bates and Mrs. Katherine M. Cook, State Superintendent of Public Instruction, 1909-10.

To Record the Acuteness of Eyesight:

The number opposite each line of the Vision Chart shows the distance in feet at which those letters should be read by a normal eye. If the eye reads the letters (or with a mistake of only one or two letters) on the line marked 20, the vision is to be noted as 20/20, or normal; if the smallest letters which can be read are on the 30-foot line, the vision will be noted as 20/30 (if vision is 20/30, parent need not be notified, if child otherwise is in good health); if on the 40-foot line, as 20/40; and so on.

If the child cannot see the letters on the 200-foot line, have him approach slowly until he can see them. If 15 feet is the greatest distance at which he can read them, the record will be 15/200; if 10 feet, 10/200; and so on.

To prevent memorizing, one letter at a time may be shown, and in irregular order, by covering the others with a piece of pasteboard having a hole cut in it, large enough to expose one letter.

CHART No. II.

DISTANCE ILLITERATE VISION CHART—FIGURES.

Use this chart in place of the "Distance Vision Chart—Letters" for children who do not know the letters, and in exactly the same way as directed for Chart No. I.

CHART No. III.

ASTIGMATISM CHART.

Test for Astigmatism:

Use the Astigmatism Chart in the same way at the same distance. If all of the lines are seen as equally dark and heavy, the child has no apparent astigmatism.

If one or more of the lines are seen to be blacker and heavier than the others, the child has apparent astigmatism, and the record should show which line is the blackest by its number on the chart.

Whenever it is learned that the child has less than 20/20 vision in either eye, or can see unusually far; that the lines on the astigmatism chart are not seen to be of even blackness; that the focusing power is markedly poor; that the child habitually tilts the head; that the eyes or eyelids are habitually red or inflamed, or styes have existed; that the eyes are crossed or have a strained appearance; that headaches of any kind, or pain in eyes or head, follow use of the eyes in reading, music-reading, sewing, or other near work with the eyes; that train sick headaches or morning headaches in the back of the head are frequent; or that the letters blur or run together when reading; the teacher will refer the case to the Principal or County Superintendent, who will send a notice to the parent or guardian of the child, that the child's eyes need medical attention, as the law requires. Effectual medical attention, with properly fitted and properly worn glasses, will cure most of these conditions.

HEARING.

Ears:

All children should be examined. Children should be examined privately and singly.

Examine the ears separately and together.

Ascertain whether the child has earache, has pus or a foul odor proceeding from either ear; suffers from frequent "colds in the head;" is subject to a constant catarrhal discharge from the nose or throat; or has noises in the ear.

Seat the child, with both eyes closed, facing you, near one end of a *quiet* room with the windows *closed*, and begin the tests of the hearing at a measured distance of twenty-

five feet. The test is to be made by having the pupil close one ear tightly with his finger, while you observe the ability of the child to repeat your moderate whispers, with equal emphasis, of numbers between twenty-one and ninety-nine, inclusive—avoiding numbers with cyphers. Avoid having a wall behind you to act as a sounding board.

Record the distance at which the child correctly repeats a series of three numbers, which gives his hearing distance for that ear, thus:

If he repeats the numbers correctly at twenty-five feet, his hearing is 25/25, or normal; if the child only repeats the numbers correctly at twenty feet, his hearing is 20/25; and so on.

Further tests for ears, thus found defective, can be made by observing the greatest distance at which each ear can hear the tick of an ordinary watch. The normal distance is at least three feet.

When the hearing of either ear is found to be defective, the teacher will refer the case to the Principal or the County Superintendent, who will at once notify the parent or guardian of the child, that the child's ears need medical attention, as the law requires.

BREATHING.

Ascertain whether the child is a constant or frequent mouth-breather; has frequent attacks of tonsilitis or sore throat; has a flat or depressed chest, occluded nostrils or difficulty in breathing on exertion.

To ascertain if the nostrils are occluded, have the child press his fingers against one side of his nose and breathe forcibly through the other—note whether one side or the other is stopped up.

If any of these conditions exist, or are of frequent recurrence, the teacher will refer the case to the Principal or County Superintendent, who will notify the parents or guardian of the child, as the law requires.

COLORADO PUBLIC SCHOOLS.

RECORD CARD.

Date.....

TEACHER'S TESTS OF SIGHT, HEARING, BREATHING, AND MENTAL, MORAL AND PHYSICAL DEFECTIVENESS.

City or Town.....County.....School.....

Principal's Name.....Teacher's Name.....

Superintendent's Name.....

Pupil's Name.....

Age.....Sex.....Nationality.....

Parent's or Guardian's Name.....Address.....

From 4 to 11 underline in ink the points that apply to this pupil.

1. SIGHT.....

Glasses used—Yes, No.....

2. HEARING.....

3. BREATHING.....

4. MENTAL ACTIVITY (Good.....Average.....Slow.....)

5. MENTAL DEFECTIVENESS.....1. Inattentive.....2. Backward.....

3. Imbecile.....

6. FREQUENT ABSENCES.....Cause.....
7. MORAL DEFECTIVENESS.....Vicious personal habits.....
Moral delinquencies.....
8. PHYSICAL ACTIVITY (Excessive.....Average.....Poor.....)
9. POSTURE.....10. VACCINATION—Yes, No.....
11. PHYSICAL DEFECTIVENESS—Under or over-development, uncleanness, twitchings, limping, deformity, head tilting, offensive breath, skin eruptions, frequent colds, hoarseness, cough, nasal voice, pain in head, hip or knee, headaches, backaches, signs of fever, signs of contagious diseases, pallor, poor circulation, teeth (crooked, prominent, decayed, dirty), frequent urination, enlarged glands, stuttering.

Indicate marked Mental, Moral or Physical Defects.

- DISPOSITION OF THIS CASE.....
- (a) Parent or Guardian notified.....Date.....
 - (b) Examination instituted.....Date.....
 - (c) Result.....Report of Physician returned
 - (d) State Bureau of C. and A. P. notified.....
 - (e) Remarks.....

These "Record Cards" on sheets, in pairs, are made up in pads, a carbon sheet being used between each pair.

The first of each pair bears the following footnote:

This sheet is to be sent by the Teacher to the Principal, or where there is no Principal, to the County Superintendent.

The second, being the carbon duplicate, has the following footnote:

Teacher's Stub—Retain for Reference.

PRINCIPAL'S OR COUNTY SUPERINTENDENT'S STUB.

To this stub attach for permanent record, when received, the Duplicate Record Card of the Teacher's Test of Sight, Hearing, Breathing and Mental, Moral and Physical Defectiveness, from which make up the reports to the Superintendent of Public Instruction, to the State Board of Child and Animal Protection, and the notification letter to parent or guardian. Sections 5873a and 5995a, School Laws of the State of Colorado, 1909.

STATE OF COLORADO.

NOTICE TO PARENT OR GUARDIAN.

THIS NOTICE DOES NOT EXCLUDE THE PUPIL FROM SCHOOL.

THIS NOTICE EXCLUDES THE PUPIL FROM SCHOOL FOR.....WEEKS.

School..... Town..... County.....

.....19....

Mr.....

Your child,, has been examined according to Sections 5873a and 5995a, School Laws, '09, and it is found that.....*sight, hearing, breathing, seem to be defective, and we advise that the child be taken to a competent physician for examination and treatment.

*Cross off words not needed.

If this notice with a satisfactory report from the physician employed is not returned to the child's teacher within a reasonable time, it will be considered as failure, refusal or neglect to comply with the law, which will necessitate report of the same to the State Bureau of Child and Animal Protection.

In case of contagious disease, the pupil will be excluded from school in accordance with the rules of the State and local Boards of Health.

.....
Principal.

.....
Co. Superintendent.

Date of Notification of Parent or Guardian.....

Examination Instituted.....

Treatment Begun.....

Result to Child.....

Date of Notification of State Bureau of Child and Animal Protection.....

Remarks:.....on further course of case.....

REPORT OF PHYSICIAN.

Town.....County.....Date.....19.....

.....
Teacher.

Dear Sir: Madam:

I have examined.....in accordance with your recommendations and find the following conditions, and have instituted the treatment as noted:

Eyes.....

Ears.....

Nose.....

Throat.....

Teeth.....

Spine.....

General Conditions.....

Contagious Disease.....

Diagnosis.....

Remarks.....

.....

.....

.....

Respectfully,

.....
Physician.

.....
Address.

.....

The Colorado law makes the teacher the preliminary examiner, makes his examination come at the beginning of the school year and requires his observation to be continuous and unremitting thereafter; covers any physical defectiveness needing attention whether bearing directly on his school work or not, besides mental and moral defectiveness; requires especial attention to throat, breathing, teeth and spine as well as seeing and hearing; leaves the medical examination not to a perfunctory official doctor, but to the family physician; refers the case back to the fundamental principle of parental responsibility and holds the parents accountable; and, lastly, has a sure and swift way of enforcing medical examination and attention supplementary to the teacher's examination.

Owing to the failure of some superintendents, principals and teachers to comply with the law and the reluctance of others to do so the instructions of the state superintendent of public instruction this year contain the following paragraphs:

"The requirements of the law providing for the examination and care of children in the public schools are mandatory upon teachers, principals and county superintendents.

"In all cases where teachers, principals and county superintendents fail, neglect or refuse to comply with the terms of the law it will be the duty of the State Bureau of Child and Animal Protection to enforce against them the provisions of the following sections of the law for the protection of children:

"It shall be unlawful for any person having the care or custody of any child willfully to cause or permit the life of such child to be endangered, or the health of such child to be injured, or willfully to cause or permit such child to be placed in such a situation that its life or health may be endangered * * * or in any other manner injure such child.

"Any person who shall be convicted of violating any of the provisions of the preceding section of this act shall be fined not exceeding one hundred dollars, or be imprisoned in the county jail not exceeding three months, or both, in the discretion of the court; and upon conviction for a second or any subsequent offense shall be fined not exceeding two hundred dollars, or be imprisoned in the county jail not exceeding six months."

Teaching is not a sort of slavery, an unrequited and enforced service. Neither is it the reluctant, uninterested, perfunctory labor rendered by one who thinks only of his wage. It is a priesthood, a high and sacred trust to be nobly and generously borne. The true teacher is not a taskmaster nor a hired servant, but the shepherd of his flock, anxious for the welfare in all ways of its individual members, eager for their good, vigilant in their interest. Such a teacher welcomes a new way of doing good to his children.

For that reason, partly, the importance of the law by no means consists in the benefit it works in the immediate and specific relief it affords the children who need it, great as that is. It is a great moral force, working upon the teacher, teaching an active interest in the children and sympathy with them, kindling a noble desire to do good, rousing an anxiety for their welfare akin to that the parent feels, and no teacher is fit to be one without some of that spirit. It goes even further in its moral influence, arouses the careless parent and goads the indifferent one. It is a yeast working in each community, a moral leaven quickening the heart and stirring the conscience. It is not by any means certain that in the long run and with the broad view this is not its chief value and most important function.

Report of E. K. Whitehead, Secretary State Board of Child and Animal Protection to the Governor, December, 1910.

CLINICAL.

Illustrative Types.

A first grade teacher noticed that one of her pupils had a running ear and did not hear distinctly. She notified the mother who merely tried to keep the ear clean. Then the teacher called on the parents, explained the law requiring such children to receive attention and advised consulting an aurist. The doctor found that the child had crowded a stick, a little smaller than a lead pencil into his ear and in his attempts to get it out had pushed it farther in. The mother not knowing about the stick had treated the boy for earache with laudanum and lard. Recovery.

—WM. V. CASEY,
Supt. Boulder Public Schools.

A physician pronounced my daughter's eyes "the best eyes in the school." A few years later, after the "Bates" law was passed, she was referred for defective eyes by the teacher. It seemed absurd and I laughed, "Pooh, she has the best eyes in the school." However, I paid attention to her and discovered that she went through peculiar movements when studying. An oculist found that she had very bad eyes. She takes great comfort in her glasses and we feel that she has been protected from loss of health and incapacity for study and work later.

—*Supt. of Schools, Louisville, Colo.*

Mrs. R. H. A., a widow from Louisiana, where there is no physical examination law, received notice to attend to her son, aged 9 years, for defective vision in left eye. The boy was in good health and defect unsuspected. The oculist found $\frac{1}{4}$ vision in left eye, astigmatism in both and right showing strain of overwork. Glasses and exercise have brought relief to right eye, $\frac{1}{2}$ vision with good prognosis to left eye, and restoration of binocular vision. The boy "sees things a whole lot differently," has been saved from possible blindness and his mother's gratitude is in proportion.

—DR. A. S. TAUSSIG, *Denver.*

In a number of operations for nose and throat defects last year, there were three of particular interest because of the resulting marked improvement in school work. One, a girl of 13, had a much needed nose and throat operation much against the wishes of her parents. They now see the benefits and are more than thankful.

—MARY G. CARSON,
Principal Sheridan School, Denver.

The State Bureau of Child and Animal Protection received notice from a teacher in Tiffany, Colo., that the parents of A. B. had paid no

attention to the school notice to attend to the defectiveness of his eyes, reported to them under the school physical examination law. The Board's travelling State Officer was instructed to stop in Tiffany and personally see that the boy was properly cared for. It is the policy of the Bureau to accomplish this without suit in court wherever possible.

I found the boy, ten years old, with eyes rolled up, no expression at all, sullen and dumb. He refused to reply to questions or do what he was told. Told the father he would have to fix the boy within the week. Father said they had no money and an older boy very sick for a long time with rheumatism prevented taking the boy to Durango to an oculist. A stockman volunteered \$10 and the father and I took the lad to Dr. A. L. Davis, an oculist in Durango, who found a complicated near sighted astigmatism in hypermetropic eyes under homatropin. With the trial lenses on the boy was sent into the waiting room. He went to the window, and cried out in surprise and delight, "O, see that man over there on the corner. See that team." He looked around the room at a big calendar on the opposite wall. "I can read every letter on that calendar." He had not been able to read at school and no one knew how much he did know. "I can make out those letters on the door." Looking out of the window again he exclaimed, "I can see every letter on that big gold sign." In school he took a full minute to make out one letter. The boy came to me and said, "Mister, will you take these glasses off, I want to see if I can see." His face dropped when I had removed them, as if he had lost something, "I cannot see a thing, will you put them back on?" He kept walking round as if he had never seen before. "When can I get my glasses?" When the doctor told him in three or four days or a week, his face dropped again, then it brightened and he smiled. He hadn't smiled before. The doctor said his happiness more than repaid for the work and he gave back the \$5 that the father had given him.

—F. G. McCONNELL,
*State Traveling Officer, State
Board of Child and Animal Protection.*

The Denver School Board has employed one or two medical inspectors to assist and supplement the work of the teachers and to instruct the parents and encourage them to obey the law without recourse to the ultimate enforcing power of the State Board of Child and Animal Protection. Dr. Pearl Wheeler Dorr, medical inspector, reports fewer notices requesting treatment sent last school year than any since the law went into effect, and that less than half as many free spectacles were furnished by the Denver School Board this year as last year.

Mr. Wm. H. Smiley, City Superintendent of Schools, Denver, thinks

that "this is explained by the fact that through the operation of the physical examination law the sum total of intelligent concern on the part of parents for the physical welfare of their children has been enormously increased."

Types Reported by Dr. Dorr.

Sadie M.; blind in one eye; family illiterate, dirty, foreigners and children backward. Pain in good eye, and headaches. School Board furnished dispensary—fitted fine glass eye with perfect motion and proper glasses for good eye. Great joy and gratitude. Effect: astonished all with increasing neatness and pride in dress and progress in studies. Through her example and influence the rest of the family improved in appearance and in making fine records in school. Sadie is now self supporting.

A Hyde Park school girl was found to have less than 5-200 vision in each eye. Her father was requested to call on the Inspector. He was rebellious, declaring it all a graft game. The child was told to read the test card. Before the test of one eye was completed the father exclaimed, "My God, I did not know she was that way." After she was glassed by the oculist she said to the inspector, "I'm so glad you told papa about me, I never knew how the world looked before. I just cried for joy when I got my glasses."

One teacher's examination discovered a girl with one eye blind from spinal meningitis in infancy. The good eye was red at times and headaches were frequent. The dispensary oculist found sympathetic ophthalmia and removed the offending blind eye. A gold ball and glass eye overjoyed the girl and her hard-working mother. Progress in school was greatly benefited.

John C., Italian, with idiotic facies was referred for nasal obstruction and mouthbreathing. A general practitioner pronounced the condition catarrhal and limited treatment to one spray. The next year the medical inspector ordered the child taken to the Dispensary where he was found to have very large adenoids. They were removed and in a short time John had a mental awakening and has made steady progress in school ever since.

(Not the least needed benefit from the physical examination laws will be the demand on the part of the laity upon the medical profession for better diagnosis and better work in cases reported for mental, moral and physical defectiveness.)

Bertha, aet. 15 years; retarded. Widowed mother went to work in the morning leaving Bertha locked in the house alone, without toys or playmates. When found by the humane officers (State Board of

Child and Animal Protection) Bertha seemed imbecilic. She had almost no sound teeth, most of them were out from decay, a family trait for generations, and she was little more than a skeleton at 14.

At the dental clinic, often causing intense suffering very bravely borne, the good teeth were filled, old roots extracted and two sets of teeth were made and she was placed in a special class in school.

Sam J. was choked with adenoids and enlarged tonsils, his eyes were defective and every tooth was crooked and decayed. His parents were Jews and well-to-do but refused absolutely to take Sam to a physician. Not until the State Board of Child and Animal Protection took the father into court and the man was ordered to pay a fine or obey the law was Sam relieved, by operation, of his adenoids and tonsils, and fitted with spectacles. Since then his school work has improved in every way.

George N., cross-eyed and backward. Parents failed to respond to written notices. A personal visit from the Inspector succeeded and the child's eye was straightened by operation. School improvement followed.

Harry A., aet. 11 years. Trachoma since 2 years old. Entropion. Boy excluded from school, father visited. Father illiterate, could not write his own name, and stubborn. Mother tuberculous and helpless. Father said the doctors had told him the boy would go blind, but he "wasn't going to have his boy butchered by no doctors." Four Dispensary eye doctors examined George, explained his condition to the father, giving the prognosis of blindness, as did also the members of the Ophthalmological Society where the father was induced to take him. Still operation was refused. Then the Humane Society (The State Board of Child and Animal Protection) interfered and had the boy placed in the hospital to be kept until well.

Before this mandatory law was passed the Inspector, then the school nurse, and the Dispensary physicians tried in vain to induce a mother to have her seven year old son placed in a cast and properly treated for a beginning Pott's disease—tubercular disease of the spine. He grew up deformed physically, was mentally crippled and showed signs of moral degeneracy.

In another case, that of a girl of 13, there was a history of a fall four years before she came under the law. She had been treated for increasing deformity of her spine by Christian Scientists. The Inspector found her distorted and crippled, using crutches and in constant pain. Treatment by physicians was absolutely refused and rather than submit to the compulsion, when the Board of Child and Animal Protection was notified, they fled the State.

I refracted Johnny D. for very defective eyes. He was naughty, sullen and backward. With his glasses he became smiling, happy and studious. One day his father called at the office and inquired, "You treated my boy's eyes, didn't you?" "Yes." "You fitted him with glasses?" "Yes." "Well he's so much better dispositioned. *Do you think you could fit my wife?*"—DR. OSEE W. HOFFMAN.

There should be a mandatory provision as a part of the law for courses of instruction in the teacher's duties under the law in all of the Normal schools of the State (now given in the Greeley, Colorado, Normal); another that no teacher shall be employed in the public schools of the State unless he shall have given satisfactory evidence of his ability to perform his duties under the law and still another that the teachers themselves shall be subjected to the same examination and care required of the children.

To still further add to the efficiency of the physical examination law and these proposed amendments teachers should be taught, and it should be mandatory upon them to learn and to teach not only justice, honesty, kindness and moral courage, but right thinking and right living, individually and socially.

• PHYSICAL EXAMINATION REPORT

1909-1910 *Biennial Report State Superintendent of Public Instruction.*

6 Counties not reporting and not counted.

54 Counties reporting and counted.

Total enrolled.....	108,798
Total examined.....	92,427
Defective eyes.....	26,978
Defective hearing.....	6,155
Defective breathing.....	8,045
Mental defective (Males, 1,237; Females, 916).....	2,153
Morally defective (Males 564; Females, 142).....	706
Other unclassified defects (Males, 10,849; Females, 10,972).....	21,821

1911-1912 *Biennial Report State Superintendent of Public Instruction.*

6 Counties not reporting and not counted.

54 Counties reporting and counted.

4 Counties failing to report in 1909-1910 reported in 1911-1912.

Total enrolled.....	130,948
Total examined.....	118,875
Defective eyes.....	16,536

Defective hearing.....	4,599
Defective breathing.....	6,884
Mental defective.....	1,504
Morally defective.....	494
Defects other than enumerated.....	2,521

STATE CAPITOL, DENVER, COLO., Aug. 1, 1913.

DR. MARY ELIZABETH BATES,

524 Majestic Bld'g,

Denver, Colo.

My dear Madam:

The fact that 118,875 school children in this state for a year were under constant and more or less sympathetic observation by their teachers and received whatever treatment they needed for physical, mental and moral ills, taken by itself alone, is more impressive than any tables of comparison or percentages. It is an immense sum total of good done that needs no comment.

The law is established as a necessary part of the school system and is more appreciated and valued year by year by both teachers and public.

Experience indicates no necessary nor important change in the Bates law unless it might be a penalty for the failure of teachers and others to make examinations and reports required. The intrinsic value of the law, however, will shortly ensure general compliance with it anyway.

During 1911-1912, 389 cases of parents refusing or neglecting to have necessary examination and treatment made were referred to this office. In every case but one we were able to induce them to do whatever was necessary without prosecution.

Sincerely,

E. K. WHITEHEAD,

*Secretary Colorado State Bureau of Child and
Animal Protection.*

SANITATION OF RURAL SCHOOLS

Report of the Committee on Health Problems in Education Representing the National Council of Education and the American Medical Association

BY

THOMAS D. WOOD AND HAROLD BROWN KEYES

It is the conviction of this Committee that there is no more important health problem in education than that which relates to the sanitation of the rural school.

The one room and one teacher country school is the oldest and most primitive type of school in this country.

In the one room rural schools are being educated 42% of the school children of the United States.

The country child needs a healthful school environment quite as much as the children in the city.

Many diseases formerly considered due to congestion of population are now known to be as prevalent relatively in the country as in the city. Typhoid fever is more prevalent in the country than the city. Scarlet Fever, Infantile Paralysis and some other diseases are as prevalent in the country as in the city.

In general, good architecture and good sanitation have been much more freely studied and much more frequently secured in the school of the city than in the school in the country, but the sanitation of the rural school is in every respect as important as the sanitation of the city school.

The problems are at foundation identical. Both the city child and the country child need fresh air; good light; clean, wholesome and attractive surroundings; but the methods of securing these educational essentials are somewhat different in relation to the two.

The country school should be the most sanitary building in the district. It should be in all the factors influencing health as good as, if not better than, any private dwelling in the community. The civic pride in every community should find expression in some building of preëminent importance to the people as a whole, which should be a model in architectural attractiveness, in adaptation to use and in sanitary excellence.

In this age of intelligent conservation of values, when the importance of child life is receiving greatest emphasis in the category of relative

values, it is altogether appropriate that in either country or city the schoolhouse should be recognized as the most important building.

The building for the training of the young may be made in any community, by intelligent planning and without unreasonable expense, a structure of genuine beauty and a source of continual safety, comfort and pleasure. All the features essential to the health of children in schoolhouses and grounds, in furnishing and equipment are within the power to provide of practically every rural community in the country.

A schoolhouse without an adequate playground is an educational deformity and presents a gross injustice to childhood.

The location of the schoolhouse (with reasonable deference to the geographical center of the community) in anything but the most desirable and sanitary position available is altogether indefensible.

Neglect of anything essential for health in construction, materials, arrangements and equipment of the rural school building is an educational sin of omission, if not a social and civic crime.

The expense of the things which really affect the health of the pupil in school should be estimated in terms of child life, child health and human efficiency, and only for convenience reduced to dollars and cents.

Observation of the rural school houses in different parts of the country show many that violate most or all of the principles of sanitation, and whose existence or use is a disgrace to any civilized community. There are many rural schools which are attractive and satisfactory when tested by all reasonable criteria. But a majority of the rural school houses are unfit for use because of unsanitary conditions. In many sections of the country the average rural school house in relation to its purpose is not as well kept, or as healthful as a good stable, dairy barn, pig pen or chicken house.

A country supervisor of schools in an old, conservative and prosperous eastern state reports as follows some conditions of rural schools in his districts:

"School houses ventilated entirely by windows, doors and cracks.

"Dry sweeping by teacher and pupils—seldom any janitor—teacher is thankful to have a decent broom.

"Toilets—Small wooden building at side of school or in the rear. Often only a few feet from school houses. Seldom any provision for vault, or dirt, or even to board up the under part. It *may* be cleaned once a year by some farmer. Locks are seldom provided. The building is open to tramps and other wayward people who both use and abuse the place.

"Windows, provided there are any, are usually broken; obscene

marks and cuttings are common. Absence of such is worthy a day's journey to see whether the report be true.

"Heating—Usually an unscreened wood stove stands in the central front of the room—battered and old, say 10 years, 20 years, and in some cases 50 years according to the date of manufacture on it. Stove pipe swings to and fro and may come out and school be delayed for a day or more at a time until the committee can find time to fix it. The damper will not work, or is gone and the teacher must have a terrific fire or none at all.

"The opposition to closing one of these rural temples of learning and transporting the children is great. The mere suggestion of closing a school of five pupils in a building where the roof leaked and the privy room had holes a foot across nearly cost me my position in that town.

"Many of these rural palaces are squatters by the roadside as neither the district nor the town own any land aside from the public highway. No playground is provided except the road."

Quotation from a report of a special educational committee:

"Your commission has been painfully impressed by the condition of many of the school buildings in the smaller towns of the state. They are old, unclean, offering no proper shelter, poorly heated, unventilated, associated with outbuildings, offensive to the senses and sensibilities of child and adult alike; buildings of a sort which would not be tolerated for an instant in the case of a state prison or a county jail. Yet in these hovels are gathered together five or six hours a day the helpless little children for whose education the State has assumed to care."

It is apparent to the members of the Health Committee that the most effective text upon which to base a constructive report on "The Sanitation of Rural Schools" would be an accurate statement of actual conditions of rural schools from representative districts of all principal types and grades throughout the country.

The following features are considered most important for satisfactory sanitation of the rural school:

I. Good Air

- (a) Supplied abundantly from out-doors in all weathers.
- (b) Not warmer than 68 deg. Fahrenheit in cold weather.
- (c) Heated (but not overheated) and kept in moderate motion by the operation of the jacketed stove or of the warm air furnace best located in a cemented basement.

It is a crime to shut in school children away from the health-giving influences of out-door air.

Out-door air is the most valuable tonic known to man and acts con-

stantly not only through the lungs but as a continuous air bath affecting the entire surface of the body.

Ventilation is a vitally important feature in the sanitation of the school.

A vitiated atmosphere lowers the vitality, increases the susceptibility to, and severity of disease, and decreases the physical working power of the individual.

II. Cleanliness—which not only influences physical health powerfully, but also produces important effects almost as directly upon mind and morals.

- (a) Dry sweeping or dusting is never justified.
- (b) Frequent scrubbing is indispensable.
- (c) Vacuum cleaning is desirable whenever possible.
- (d) Wet sawdust or oily mops should be used for cleaning floors. Damp or oily cloths are best for wiping off furniture and woodwork.
- (e) Clean bodies and clean clothing of pupils and teachers in addition to a clean schoolroom are necessary to make a sanitary environment for every pupil.
- (f) Flooding the schoolhouse with sunshine and fresh air in addition to thorough scrubbing and cleanliness are better than any form of chemical disinfection.

III. Water—pure and abundant.

- (a) Water should be as free for internal and external use, as health giving and as available as air.
- (b) Individual drinking cups or a drinking fountain should be furnished in every rural school.

IV. Disposal of Sewage.

Provisions for toilet accommodations and sewage disposal in every rural school should satisfy all essential sanitary requirements.

The relation between water supply and sewage disposal in the causation of typhoid is too well demonstrated to be disregarded.

V. Lighting.

- (a) Light should be abundant and effectively controlled.
- (b) Windows should
 - 1. Be located at left, or at left and rear of the schoolroom.
 - 2. Extend to ceiling and provide a lighting area equal to $\frac{1}{2}$ to $\frac{3}{4}$ of the floor area.
- (c) Light should be controlled by double shades.
- (d) Direct sunlight should have access to every schoolroom sometime during the day.

VI. Hygienic Furniture, Books and Materials.

- (a) Desks and seats should be individual—separate—adjustable—clean.
- (b) Books and other materials should not only be sanitary but attractive enough to stimulate a wholesome response from the pupils.

VII. Screening Against Insects.

Mosquitoes may convey malaria and yellow fever germs.

Flies may convey germs of typhoid, tuberculosis, infantile paralysis and perhaps other diseases.

Fleas may convey bubonic plague.

Ticks may convey Rocky Mountain fever.

Every schoolhouse should be effectively screened against mosquitoes and flies.

VIII. Location, Site, Surroundings and Grounds.

(a) With reasonable regard for geographical center of community, rural school should be located on site

1. Well drained and away from stagnant water.
2. Free from troublesome noise, unpleasant outlooks or air contaminations.
3. Protected (as well as may be) from unfavorable weather influences.

(b) School grounds should provide sufficient space for play and games.

IX. Sanitation of the rural school requires not only healthful building and well-kept grounds but the intelligent and conscientious effort and coöperation of teacher and pupils for preservation and improvement (where possible) of all the health values in the school and the school surroundings.

X. The arrangements and equipment of the rural school should not only conserve in every vital way physical health, but should also favor in all fundamental particulars the social and moral welfare of all the pupils.

Among the reasons which explain the present deplorable conditions of rural school-houses, the following are prominent:

- (a) Low architectural and sanitary standards in rural regions generally throughout the country.
- (b) Ignorance regarding the physical and moral effects of unattractive and unsanitary school buildings upon the children and upon the community as a whole.
- (c) False economy expressed by local school boards in failure to vote enough money to build and maintain suitable school plants.
- (d) Lack of supervision or assistance by the state which is usually necessary to maintain desirable standards.

Some important influences which are effective for securing and preserving the sanitary with other valuable features of rural schools are suggested:

- (a) Furnishing by the Government Bureau of Education and by State Departments of plans and instructions for construction and equipment of rural school buildings.

The Bureau of Education in Washington is already supplying on request valuable help of this kind, and a few state departments are demonstrating what may be done by supervision and support which aids without restricting.

- (b) Supervision of rural schools by State Departments of Education with power
 - (1) To condemn unsanitary and wholly unsuitable buildings.
 - (2) To give State aid to rural schools when the local authorities fulfill certain desirable and reasonable conditions.

- (c) Inculcation of ideas and standards of school sanitation in minds of local school patrons and school authorities who control school funds and who administer the affairs of the schools. Public lectures in the schoolhouse on health topics.

- (d) Introduction of effective school health courses in normal schools and teachers' institutes.

Better education of rural school teachers, county superintendents and rural school supervisors in the principles and practice of school hygiene and sanitation.

- (e) Instillation in rural school pupils of interest in and enthusiasm for the improvement and care of all features in the school and surroundings which effect health and happiness.

Development among pupils of organizations like "Pupils' Board of Health," "Civic Leagues," or "Health Militias," for actual constructive effort.

- (f) Coöperation with the rural school of organizations like "The Granges," "Women's Clubs," "County Medical Societies," and other groups so situated that they may further the cause of health and efficiency in the school.

- (g) Popular education by attractive but reliable health information in the public press.

- (h) Social demonstration of health standards and ideas for rural communities (corresponding in type to demonstrations of U. S. Bureau of Agriculture).

The Health Committee of the National Council with the coöperation of the Committee of the American Medical Association is making a study of the actual conditions of sanitation in rural schools in different parts of the country as a basis for an authoritative report upon this subject which shall:

- (a) State the health conditions of country schools as they actually exist at present.
- (b) Explain very clearly by illustrations and descriptions the different types of sanitary schoolhouses and sanitary equipments which are most desirable and most suitable for the varying conditions in different parts of the country.
- (c) Outline convincingly the various influences within and outside of the rural community which may be effective in bringing about marked improvement in all the conditions in the rural school which effect health.

The report of the joint Health Committees will be embodied in a Special Bulletin on Country School Houses to be issued at an early date by the United States Bureau of Education.

This bulletin is being prepared by Dr. Fletcher B. Dresslar, a member of the Health Committee of the National Council, with the coöperation of the two committees referred to above. Dr. Dresslar has collected statistics from school authorities concerning over 1,300 schools in 19 different states.

The two Health Committees have employed a field secretary who has personally studied with detailed care and photographed one hundred rural schools in five states.

The purpose of the report is to provide for every person who desires such help, the best available information regarding the construction, equipment and maintenance of attractive, healthful and inspiring rural school houses.

The Health Committees express appreciation of the valued counsel and coöperation of the United States Bureau of Education.

The two committees plan to take up in succession other health problems in public education.

DISCUSSION OF

T. D. WOOD'S AND H. B. KEYES' PAPER

BY

DR. ROY K. FLANNAGAN

In defense of the author's statement that screens should be installed and in emphasis of his contention that public education was the keynote of the rural school inspection situation, the criticism being that screens were a makeshift, expensive and non-effective, and that stagnant water and filth places must be abolished.

Of course all filthiness and marshiness should be covered up or removed, but something must be done in country districts where there are large marshes and ponds in proximity to the school and no county public health service worthy of the name. We cannot let the children be exposed to the dangers of flies and mosquitoes without doing something, so screens must be put in. Mosquito bar tacked in the windows is being used in many places, is cheap and *is* effective.

Public education must furnish the eventual solution. It may be of interest to state how the State Board of Health of Virginia is meeting its responsibilities along this line. All of the social, educational and public health agencies in Virginia have entered into alliance to furnish enlightenment for the whole State. Lectures in popular form have been prepared, and a bulletin outlining their scope, and the speakers available have been distributed broadcast over the State. All State officials on this program are available for lectures in any part of Virginia without cost to the community. The other speakers may be had for actual traveling expenses. The publicity bureau of the State Board of Health has charge of this Lyceum and will arrange lecture courses at the request of any organization whether municipal, religious or social.

DISCUSSION OF
T. D. WOOD'S AND H. B. KEYES' PAPER

BY
PROF. CLIFTON F. HODGE

In this admirable paper I note that Dr. Wood recommends that our rural school houses be supplied with screen windows and doors. "Shades of the prison house!" I hope in publication of his paper he may be induced to leave these out of his specifications. They are expensive, they interfere with both light and ventilation and they are antiquated as to both theory and practice, and no longer even touch the solution of either the mosquito or fly problem. Insist, rather, that the teacher interest the pupils and parents in cleaning up breeding places and doing away with the pests out of doors. It will probably cost less to do this work right in most rural districts than the screens of a school house will cost and then neither the school nor the homes will require screening, and the children and everybody will be safe from annoyance or infection on the way to and from school (where the screens of the school house cannot cover them) or about their homes. The screens may hinder or delay the real work and to solve these insect problems right will be a big education for the whole community.

WORKMEN SETTLEMENT SCHOOLS

BOARD OF WATER SUPPLY, CITY OF NEW YORK

"DR. THOMAS A. STOREY, *Secretary-General*.

"*Dear Sir:*

"This work began in the Spring of 1907. At that time I was interested in endeavoring to solve the problem of contentment and efficiency on the part of our engineering force. To that end we arranged for a clubhouse; secured from the public libraries of Brooklyn and New York books for use by and circulation among the engineers, the result of which was the establishment of an esprit de corps which has been an efficient factor in the work.

"This naturally led to the efficiency and contentment of the laborers working on the various contracts, and considerable study was given to this subject. So far as the physical conditions were concerned the contracts were carefully drawn to provide for sanitation, cleanliness, and a reasonable degree of home comfort in the building of suitable houses; for a supply of drinking water; for sewerage, for septic tanks, incinerators, proper policing, and rules and regulations controlling same. As the work has progressed the contracts in this respect have been amplified and perfected.

"Under the restriction of the eight-hour law, to secure as nearly as possible 100% of efficiency it was necessary to take into consideration not only physical conditions, but some field of mental activity and employment that would reasonably occupy the time of the laborers when not at work. This suggested the idea of what are called "camp schools" for grown men and kindergartens for little children, in addition to the regular public schools for children. It was found that under the Act there was no provision for the support and maintenance of such schools, and it became necessary to raise the money from outside sources. To this end we interested the Society for Italian Immigrants. Dr. Jane E. Robbins, Chairman of the Camp School Committee, was given direct oversight of the Society's educational work on the reservation, and Miss Sarah W. Moore was made superintendent of camp schools.

"The first contribution was made at Lake Mohonk, in response to an address which I made on August 26, 1908. This amounted to \$176, which was increased at that time, by contributions of the Commissioners of the Board of Water Supply, the engineers, Mayor McClellan and others, to \$831, and was the beginning of the work. To the support

of this work the Italian Government has given substantial aid, and at Valhalla the North American Civic League has supported the school.

"At the Ashokan Reservoir the contractors put up a schoolhouse and building for the teachers; and at Valhalla the Board of Water Supply gave the use of one of its buildings, to which an addition was built by the contractors. The workmen in these schools are taught to read and write the English language, and incidentally given some knowledge of the laws and institutions of the country, beginning in a simple way and gradually developing their knowledge of municipal, state and federal government, with the rights of persons and property. This goes to the root of the immigration problem, pointing out to these men the advantages of becoming good, law-abiding citizens.

"The work of the Board of Water Supply is being done under the eight-hour law, and it is believed that if a man's time is properly employed during his hours or recreation, he will pay closer attention to his work, and be more likely to put in eight hours of real work in his working day; in other words, 100% of efficiency. Through the medium of a common language misunderstandings between the employer and employee will be done away with, and the Italian, Slav, Pole and other nationalities represented among our working people, through the influence of these schools, will in the main become not only efficient workmen, but law-abiding citizens. This undoubtedly has been a factor in the fact that up to the present time there has been no strike on the work of the Board of Water Supply.

"The situation may be summed up in one word in connection with administration, engineering and other problems—the *human side* of the workman has been considered.

"Yours truly,

"CHARLES N. CHADWICK,

"Commissioner.

VALHALLA, N. Y., April 14, 1913.

Welfare Work at Camp Kensico.

The principal camp for the laborers connected with Cont. 9 for the construction of Kensico dam and appurtenant works near Valhalla, N. Y., consists of 24 twenty-four-man houses and of 20 two-family houses. This provides for a population of from 750 to 800 people. In addition to this, other laborers and their families board in houses acquired for the work by the city and given over to the contractor for his use and in a relatively large number of private houses in the neighborhood and at North White Plains, about one mile distant. It seems fair, therefore, to estimate that there is a population of perhaps 1,500 foreigners within a mile of the camp.

For the social betterment of this population the North American Civic League for Immigrants with principal office at 95 Madison Avenue, New York City, established early in November, 1910, a camp school. This school is located about 1,000 feet from the camp in a dwelling house, on land acquired by the city for the purposes of Kensico reservoir, and the use of which was by resolution of the Board of Water Supply "held by this Board for the uses and purposes of a Camp School."

The school building is a frame structure with four rooms on the first floor, four rooms and a bath on the second floor, and opportunity for perhaps three rooms in the attic. In addition to this, there has been erected a high-roofed one-story building with seating capacity for 125, which serves as a hall and gymnasium and is provided with toilet rooms for men and for women, cloak rooms, a stage and dressing rooms. This building was erected largely, if not entirely, at the expense of the contractor, H. S. Kerbaugh, Inc., who also furnishes the electric light for the building and for a large electric sign. The contractor further contributes monthly, I am told, a generous sum towards the defrayment of the expenses of the school and the supervisor of the school expresses her appreciation of the informal active interest which he and his assistants display and of their readiness to help practically with labor and supplies for miscellaneous purposes. The garbage is collected daily and incinerated by the contractor's collection service. The toilets and the wash water wastes are connected with the camp sewer.

Resident at the school are Miss Anne Young, who is the supervisor and is also teacher in the night school and Miss Kennedy, teacher in the afternoon and evening classes. There is also a cook or housekeeper and a janitor is provided. There are two other teachers—non-residents—one in gymnasium work, who comes on Tuesday afternoon and Friday afternoon and evening, and the young lady who has charge of the day school.

The day school may really be considered perhaps as an overflow of the regular town school at Valhalla, and the teacher is furnished by the town board. This school, which has an average attendance of 42, takes principally those children of the camp who, for one reason or another cannot be graded, and prepares them for promotion to the regular town school. Prior to its formation the regular school was so overcrowded that it was run almost entirely on a part time basis, which resulted in a number of children not attending school at all, a condition which is now entirely relieved.

In addition to the day school, which meets in the large hall twice a day and 5 days in the week, the principal activities of the Camp School consist of the gymnasium work every afternoon except Saturday, with

instruction each day and special trained instruction two days a week; the night schools for men, five nights a week, and at less frequent intervals during the week, the regular classes in sewing, domestic science, sanitary and health hygiene for the women of the camp; and club meetings for the girls. At the afternoon gymnasium classes the number of children attending has been as high as 40. The average attendance at the men's evening school is 33. They are taught to read and write English and are given instructions in our republican form of government, both as to its form and the part they may take in it.

Saturday evening is given over to moving pictures or a dance in the hall. Rainy days, when the men cannot work, the house is free for them to use it as a club, there being provided for their amusement a Pianola, a Victor, and books and foreign newspapers. Twice a week are received Russian, Polish and Italian daily and weekly newspapers. Twice a week also there is maintained a book exchange. The library consists chiefly of boy's books furnished by kind friends. Regularly also each week the supervisor makes visits throughout the camp, in addition to which there are frequent visits made in response to requests.

No religious services are held in connection with the school, the work being entirely non-sectarian and the school building is not used on Sundays by any religious sect as a meeting place. On certain week days a meeting place is provided there for the instruction class gathered together and presided over by two of the French nuns. On Sunday morning is held what is called a "Story Hour" for the children. In the afternoon if the weather is fair there is a walk which is very popular not only with the older children but with the younger of the adults, and has been attended by as many as 50. Sunday evenings, and also the afternoons, if stormy, are given over to the playing of games. Cards are not permitted and the old fashioned round games are most popular.

In the first year of the work a playground was started and the usual apparatus erected, but last year there was no regular instruction on the playground. The apparatus is now in fair repair and it is planned to have it put into shape for this summer and to have a trained instructor.

BROWN'S STATION, N. Y., April 15, 1913.

School—Contract 3 Camp.

The Camp School at Brown's Station was organized and conducted by Miss Sarah Moore, who came here in the spring of 1908. She was deeply interested in the school and translated and edited a primer or reader for the Italian pupils. This primer used common expressions such as were needed by the employees on their work, and has acted as

a great assistance to the ordinary workmen. Her work was conducted under the auspices of the Italian Immigrant Society of New York.

Miss Moore went to Valhalla after leaving Brown's Station and there conducted a school for Italians under a tree. The school was conducted all summer when Commissioner Chadwick provided a building for the school. This latter school, I believe, was conducted under the auspices of the Civic League, of which Miss Anne Morgan was one of the promoters. Since Miss Moore left Brown's Station the Camp School has been conducted by Mrs. A. E. Talbot, formerly of New York City, where she had a very excellent record as teacher in the public schools for 15 years and had been brought in contact with foreign elements similar to that which she encountered at Brown's Station. She has been deeply interested in her work and has not cared to go into district school work or return to New York for her regular school duties.

The school has been conducted at the camp for the whole year. It has consisted of a night school conducted principally for the Italian workmen and a kindergarten for the Italian children. For a short time a day-school was undertaken to provide for the night shift but this was found to be unsatisfactory and was later abandoned.

Children of school age of whatever nationality come under the regular requirements of the district school. Two schools were provided for this latter class of pupils. The kindergarten was open to other children besides the Italians, and American children as well as Russians, Poles, etc., were accommodated at the school where they received the elements of education.

The school building has three distinct parts; one part is a large room which has a stage at one end and can be subdivided into two rooms by a folding door. Attached to the building is the regular district school, with two rooms; one of the latter accommodates one of the classes of the night school. MacArthur Bros. Co. and Winston & Co. furnished the building for the school and provided light and heat. The funds for the maintenance of the school were provided by the Italian Immigrant Society, which obtained money from subscriptions and funds of other Italian societies. A building was built near the school to provide for the teachers' accommodations. This is a very comfortable and homelike building, fitted with every modern convenience.

The school is conducted as an absolutely free school and no fees whatever are levied upon the pupils of any nationality. The district schools are divided in such a manner that all the American pupils are sent to the school at Brown's Station proper while the foreign and colored pupils are accommodated at the camp district school.

The water supply for the Camp School is provided from a spring three miles distant on the side of High Point Mountain. It is piped

to the camp and school, and plenty of good, wholesome water is provided for all concerned. The workmen are provided with shower bath, with hot and cold water at a convenient point near the school. A regular flush water closet is provided in the school with running water, also a wash bowl.

The camp physician is at hand to examine all pupils at the first indication of disease or malaise. If the teacher suspects or notices any indications of disease, she notifies the doctor; the pupils are then compelled to undergo a medical treatment and take proper medicine. They are instructed in proper sanitary and hygienic principles, must keep clean and neat, and take proper care of their persons. The district school has numbered about 70 while the kindergarten has had 30 or more. The night school for workmen has naturally varied very much according to the work in hand by the contractors; 50 or more pupils have been there quite regularly and the register has shown at times more than 100.

A play was written and staged by one of the workmen. Mr. Malpezzi, a stone mason and laborer, wrote the play and it was a great success. He trained the men personally and conducted the whole show.

One boy who has been with the school since its inauguration has been very faithful and now is taking a correspondence course. Another boy who has spoken English for several years, but could not write has become very proficient in reading and writing under the teaching of the Camp School. The deportment is excellent and very rarely is there occasion to speak to a man in relation to his behavior. It is natural that the spirits of the water-boys at times bubble over but it is only good-natured fun and is quelled by the influence of the more sedate men. Friday night has been assigned as geography night and a map of the United States is studied and on this map are indicated the various products of the country. One of the pupils who has been in the school for about a year has become a very proficient translator and lectures to the class under the guidance of Mrs. Talbot.

All varieties of foreigners are welcomed at the school and there are Austrians, Russians and Poles, besides the majority which are Italians. The Russians have shown a particular interest in general education and are very bright. One of the latter, a former blacksmith in the Russian army was very proficient in his trade. He was offered 80 cents per hour to go to work on a job in Porto Rico. As the position was offered him on Government paper with the official heading nothing could convince him that he might decline the position if he wished; even when a like salary was offered by the contractor at Brown's Station he refused to accept it. It later developed that his training had caused

him to believe that an offer from the Government was equivalent to an absolute command.

The school has received letters from all over the world from former pupils, showing that its influence has been far-reaching. One boy who was extremely bright and thrifty went home to Italy after seven years in this country. On attempting to return to his work and school he was forced to enter the army. This is a common practice. He receives there, besides his food and clothing, a wage of two cents per day, in comparison with forty cents per hour which he had received here at his trade.

Some of the foreigners are so strongly attached to this country that they have no desire to go home and in fact refused to sing "Home, Sweet Home" in the school.

One foreigner could not understand why he did not have to pay at least 50% of his wages to some Government official and was afraid he would be arrested for not putting that money where some official could get it. One of the Russian pupils has gone to Canada where he has bought a house and property, sent for his folks and become a land owner. One of the Italian pupils was complaining to Mrs. Talbot, the teacher, that, strive as hard as he could under his ordinary wages (about \$300 per year, net) he had not been able to save more than \$400 in two or three years.

LA ENSEÑANZA PRÁCTICA DE LA HIGIENE EN LOS JARDINES DE NIÑOS

JOSÉ Y. SALOMA

Los niños de 4 a 6 años de edad manifiestan decidida propensión a reproducir en sus juegos y pasatiempos las ocupaciones de las personas serias con quienes viven: los hijos del obrero, del industrial del profesionalista improvisan fácilmente y como se imaginan el taller, fábrica o gabinete de trabajo de sus padres y con el primer objeto que les viene a la mano llevan a cabo, con ingenua audacia e infantil torpeza, la caricatura bien inspirada y mejor acabada de los asuntos que tienen a la vista.

Admira la formalidad con que esos rapazuelos pretenden arreglar complicadas maquinarias, con las piezas rotas y oxidadas de un viejo reloj, llevar imaginarios libros de contabilidad en los fragmentos de un periódico en que vinieron envueltos algunos artículos del mercado, o dirigir vehementes alegatos ante un monigote de cartón. Su imaginación eminentemente creadora, suple de modo admirable, las innumerables faltas de verdad y corrección de sus balbucientes trabajos, los que para el niño son tanto más interesantes y llenos de atractivo cuanto más ilógicos y disparatados.

Cuando el niño tiene la fortuna de encontrar algún amigo o pariente de la familia que tenga la complacencia de seguir sus caprichos inocentes, de adoptar sus maneras candorosas y de interesarse por lo que suyo seduce y fascina al niño, se observa algo muy importante, si bien enteramente natural, propósito de las relaciones entre él y su viejo camarada, de altivo y exigente que era al principio, tórnase luego en sumiso y dócil a las menores indicaciones; procura complacer y halagar, al compañero, haciendo alegre y empinosamente todo lo que este le sugiere.

Estas observaciones que, con un poco de atención, puede comprobar quien quiera que haya vivido con niños permiten hacer las siguientes afirmaciones.

(1) Los pasatiempos de los niños entre 4 y 6 años de edad son tan variados como las múltiples formas de actividad humana; reconocen como origen entre otras cosas la poderosas fuerza de imitación, innata en ellos, sin que nada les importe la utilidad, dificultad en propiedad de los diferentes asuntos que sirven de motivo a sus juegos

(2) Los niños se asocian, en sus diversiones, preferentemente con otros niños o personas de edad que tengan o aparenten tener sus mismos gustos e inclinaciones. Estas últimas personas después de un tiempo

preparatorio, en que la paciencia, la discreción, y el afecto juegan importantísimo papel, pueden transformarse en mentores del niño y a la vez en compañeros obligados de sus juegos.

En estos fundamentos que la ilustración de los Srs. Congresistas me exime de ampliar se apoya la iniciativa que respetuosamente someto a su deliberación, consistente en que los niños de los K. G. no solo se dediquen a trabajos de desarrollo físico, intelectual, y moral, sino también a ejercicios rudimentarios de higiene, por los que seguramente tomarán el mismo gusto e interés que por los primeros, siempre que conversen su carácter enteramente recreativo y tiendan a desarrollar y no a fatigar sus nacientes facultades.

Como la higiene individual abarca la vida entera, será sumamente fácil encontrar motivos o temas para esta clase de trabajos. Los niños dirigidos por un personal inteligente jugarán v. g. ala construcción de pequeñas casas de papel u otra materia análoga, procurando que resulten enteramente irreprochables desde el punto de vista sanitario y de confort. Terminadas estas diminutas casas muñecas se reproducirán algunas excenas de la vida real, procurando desarrollar en el niño hábito de higiene, por ejemplo en el juego de la comidita se servirán manjares que por su cantidad, calidad, condimentación, etc., sean masa propiados a la edad y demás condiciones del niños, o a las imaginarias de los diminutos comensales de cartón o celuloide.

Cuando del baño se trate, se aplicará el tibio, el de regadera, etc., sujetándose a las circunstancias del caso, evitando los enfriamientos, vistiendo al pequeño muñeco, con la ropa más limpia y apropiada, según su ocupación, clima, estación, etc.

Las nociones higiénicas adquiridas por el niño, durante su permanencia en el K. G. lo prepararán seguramente para que, cuando grande, pueda resolver satisfactoriamente los graves problemas de higiene pública y privada. Entonces quizá la titánica lucha contra el alcoholismo, tuberculosis, senelidad precoz y otras calamidades colectivas, llegará a ser verdaderamente efectiva y fructuosa.

ON THE DIFFUSION OF ANTIMALARIAL INSTRUCTION AND MALARIAL PROPHYLAXIS IN SCHOOLS IN MALARIAL COUNTRIES

BY

ERNESTO CACACE

In the Third International Congress of Scholastic Hygiene, held in Paris in 1910, in a report of mine I discoursed on the *aims, methods and results* of antimalarial tuition and scholastic antimalarial prophylaxis which I *planned and initiated*; and I had the honour to draw up the following record which met the approval of the 5th Section of the Congress, presided over by Prof. Hutinel:

Le III Congrès International.

Cacace.—L'enseignement antimalarique, dans les écoles et la prophylaxie antimalarique des écoliers (Troisième Congrès International d'hygiène Scolaire, 1910, Paris) *d'Hygiène Scolaire de Paris, considérant la gravité des désastres provoqués par la malaria dans les pays infestés, émet le vœu: Que par l'initiative privée et l'intervention des états, l'enseignement et la prophylaxie antimalarique commencent les plus tôt possible dans toutes les écoles, surtout primaires, des pays malariques, en intruisant d'abord les instituteurs, afin qu'ils puissent enseigner aux populations les règles les plus élémentaires de la prophylaxie et concourir avec le médecin, l'ingénieur et l'agronome à la lutte contre le fléau.*

In this report of mine I shall resume all that was done in Italy on behalf of antimalarial tuition and scholastic antimalarial hygiene during the years 1910, 1911 and 1912 (*i. e.* in the years which followed the Congress of Paris) by means of the antimalarial educational tuition which was founded and directed by me; and I will mainly discourse on the results obtained. The main object of this report, which follows that given to the Congress of Paris, is to determine a greater diffusion of my experiments in the malarial world, giving rise to its beneficent effects obtained in the last three years.

Antimalarial Tuition.—This tuition consisted of two branches: "*magisterial tuition and elementary tuition.*" Magisterial tuition was imported in magisterial causes of antimalarial hygiene and in normal schools, and proceeded according to the following didactic programme drawn up by me:

1. Rudimentary history of the malaria.
2. Parasites of the malaria.

3. Malarial mosquitoes (life and ways, hints upon the method of capturing, guarding and conveying them.)
4. Process of penetrating of malarial germs and vehicles for the propagation of malaria.
5. Predisposing causes:
 - a Organic or biological (age, sex, races, immunity, inborn, acquired, artificial).
 - b Physical or local (soil, water, air relations between husbandry and malaria, relations between meteorology and malaria).
 - c Economical and social (relations between the malaria and alimenation dwelling, clothing, working, education).
6. Epidemic types.
7. Geographical distribution of the malaria with special regard to Italy.
8. Clinical forms of malaria—diagnosis and prognosis.
9. Quinine and its salts (mechanism of its functioning, absorption, elimination, posology).
10. Healing of malaria.
11. Quininic and mechanical prophylaxis.
12. Destruction of mosquitoes.
13. Hydraulic and agrarian meliorations—Internal colonization.
14. Anti-malarial legislation.
15. Organization of anti-malarial struggle.
16. Anti-malarial education and scholastic anti-malarial prophylaxis.

The tuition was often followed by a didactic training, which was completed in primary schools by scholars of magisterial courses, according to my methods, which I pointed out in the Third International Congress of Scholastic Hygiene in Paris. Indeed these scholars, by means of compositions, little tales, poems, problems of arithmetic and elementary geography tuition, natural history and agrarian science, could gradually learn how to teach in an easy, clear and precise manner the most elementary notions of antimalarial hygiene to the young scholars of primary schools.

Magisterial tuition during the years 1910, 1911 and 1912 was held in Capua, Naples, Giuosa, Salemi, Trapani, under authorization of the Board of the Education and was always crowned with brilliant examinations, which were judged by me, an official commissary and the teacher of each course.

The courses of Capua and Naples were held every day by the movable chairship of antimalarial hygiene for the Campanian provinces (the first movable chairship against the malaria created in the civil world), and the examinations of the pupils of these two courses were also judged by Prof. James Rossi, director of the agricultural-anti-

malarial station of the R. Superior Agriculture School in Portici and of the Federacy of the Campanian Agricultural-Antimalarial Committees.

The course of Trapani issued last year the Trapanese Section of the Educational Antimalarial Station, with the movable chairship of antimalarial hygiene for the province of Trapani, whose care fell upon Dr. Paul Maltese.

In other provinces schoolmasters received instructions on the most important precepts of antimalarial hygiene by way of lectures, occasional advice, pamphlets and newspapers.

Everywhere schoolmasters learned with enthusiasm and zeal the new precepts and became the best collaborators of doctors in the struggle against the malaria.

The elementary tuition was accomplished in the primary schools of some malarial commons in several Italian provinces, particularly in those of Alessandria, Benevento, Cagliari, Caserta, Catania, Ferrara, Foggia, Lecce, Reggio, Calabria, Salerno, Trapani. Among these provinces that of Benevento distinguished itself, as there, owing to the labour of brave schoolmasters, urged upon my invitation by D. Mele, president of the Agricultural-Antimalarial Committee, the tuition in question was held in the commons of Amorosi, Baselice, Castelpoto, Castelvenero, Ceppaloni, Faicchio, Foiano Valfortore, Melizhano, Moiano, Pago Veiano, Ponte Pretaro, Reino, S. Giorgio la Montagna, S. Lencio.

Elementary tuition was often imported also in the schools for illiterate adult people, and was sometimes followed by an extra scholastic propaganda.

Lessons of antimalarial hygiene were also dictated in some agrarian and mineralogical schools.

The results of antimalarial teaching were soon observed; the antimalarial struggle was remarkably favoured, the cure of malarial persons was intensified, the confidence in the prophylaxis, the quinine one particularly, augmented, the use of State quinine augmented in some places, the formation of a hygienic antimalarial conscience in the people was realized.

From school antimalarial education irradiated amongst the people and became a real popular education, and was an important prophylactic means.

The utility of antimalarial teaching was *perceived* and *appreciated* in other countries, particularly in Algeria where the antimalarial campaign is performed on account of the general government, under the wise direction of the brothers Sergeant, a scholastic propaganda has been accomplished for several years.

Schoolmasters teach their pupils the way of recognizing and destroying anopheles, so elucidating many excellent lessons on things.

In Greece, by dint of the National Antimalarial Society, presided over by Prof. Savas, the antimalarial education of schoolmasters was lately initiated; these were therefore instructed by some physicians who were the delegates of the Society; a distribution was made amongst pupils of decalogues on the State quinine and illustrated pictures, edited by the Ministry of Finances for the Ministry of Finances for the diffusion of the use of quinine. Noteworthy was in 1910 a course founded by the Board of Education and frequented by eight thousand schoolmasters, whom Prof. Cardamates taught the notions of etiology and prophylaxis of the malaria.

In the Indies the Second Congress of the General Committee against the malaria, held in Bombay in 1911, stated that the education of the folk is the *most important of antimalarial measures* and every effort must be made in order to assure the coöperation of the public to the struggle, and added that *instruction in schools* as well as lantern lectures in cities and villages are best means of propaganda.

In the Argentine Republic the Medical Scholastic Inspectorate presented the proposal of compulsory antimalarial teaching to the president of the National Council for Education.

This proposal, which was drawn up by the Director of the Inspectorate, Prof. Sisto, has had, it can be well said, its origin from the report and record which I presented to the Congress of Scholastic Hygiene in Paris, and magnifies highly the utility of antimalarial education in schools, always more impressing upon public consideration *my idea and initiative*.

Compulsory antimalarial teaching was, since 1911, *proposed by me* in the First National Congress of Pedagogy in Rome.

The diffusion of educational antimalarial teaching in the above-mentioned countries is perhaps the best result I think of the antimalarial teaching initiated in Italy, since it aims at giving the antimalarial struggle a powerful impulse for the hygienic conscience of the new generations.

Antimalarial Prophylaxis in Schools. The prophylaxis was performed either by the daily method (Celli) or every second day in pupils exempt and already malarial of elementary schools and kindergartens, by means of tablets of State quinine and sometimes of small pieces of chocolate containing tannate of quinine.

As a rule a single tablet or piece of chocolate was furnished daily. The quininic prophylaxis was ordinarily performed during the school period, in the last months (from May to July or to the first half of August) with frequent inspection of the scholars during the summer holidays for the certificate of the results, and sometimes it was carried on as long as November or December. The tablet of quinine was almost

always swallowed with facility and only a few times it could not be swallowed by little scholars; the pieces of chocolate with tannate of quinine, when they were employed, were taken without difficulty and often with pleasure by school children.

The tolerableness was always first-rate except in some rarest case; one never lamented, though repeatedly and diligently taught the pretended inconveniences deriving from the use of quinine, proclaimed by the adversaries of quinine prophylaxis.

Not seldom schoolmasters directed prophylaxis to themselves by swallowing the quinine in presence of their pupils, and so urged by their example to subdue to prophylaxis.

No case of fever was remarked by the doctors Alzona, Ricciardi, Sacchi, Sergi, Timpano, Zireno, in the pupils who had been treated in the schools of Villanova, Monferrato (Alessandria) Giuosa (Lecce), Campagnatico (Grosseto), Palizna Marino and Bova Marino (Reggio Calabria).

With nearly the same result was crowned the prophylaxis in the schools of Amorosi, Castelpoto, Ceppaloni and Faicchio (Benevento), Lucero (Foggia), Massafra (Lecce), Meliznano, Moiano, Pago Neiano, Ponte Pretara and Reino (Benevento), Seuse (Potenza), S. Giorgio La Montagna and S. Leucio (Benevento).

Dr. Brignone at Terranova Monferrato (Alessandria) noted among 275 pupils submitted to prophylaxis, among whom 192 were already malarial, two shortest relapses, whereas of 42 pupils not quinized three were struck with fever; in 1911, among 278 pupils submitted to prophylaxis, he found out three cases of relapse also very slight, whereas 37 pupils not or little quinized, offered to the observation, two cases of tertian fever; in 1912, among 269 pupils treated, of whom 196 already malarial, he observed two slightest relapses, while among the 39 scholars who had not been regularly submitted to the prophylaxis he found out two cases of tertian fever.

Dr. Genovese in Canlonia (Reggio Calabria) treated, in 1911, 47 scholars, of whom 5 got fever. Dr. Landolfo in Bruzhanò (Reggio Calabria) registered in 1911 a case of fever among 50 children of the kindergarten who had been treated from May to August and observed eight cases among 40 pupils of the elementary common school who had been treated from May to August.

Dr. Maltese in Salemi (Trapani) in 1910 registered over 276 malarial pupils or so presumed who had been quinized, 7 relapses (2.54%), in 1911 3 relapses among 31 pupils (1.3%), in 1912 among 90 one relapse (1%).

Dr. Poletti found out in 1910 three relapses among 57 children who had been treated in the kindergartens of Pontepossero and Cortalta

(Verona) and in Vigatio (Verona) in 1910 among 17 malarial children of the kindergarten who had been quininized during the interepidemic period and among 139 children of the same kindergarten, healthy and malarial, submitted to the prophylaxis in the epidemic season, he noted two relapses and one primitive, and in 1911, among 12 who had been cured in the first period and 143 who had been treated in the second period, he obtained the same results, *i. e.* a percentage of morbidity below 2% against that of the children aged below 5 years, which rose in the common as high as 27%.

Dr. Tarasconi in Serramanna (Cagliari) registered in 1910 a percentage of morbidity of 1.5% among 316 scholars submitted to prophylaxis from the 15th May to the 6th July, and a percentage of 3.5% among 370 scholars quininized from the 11th September up to December, while among 316 scholars submitted to prophylaxis during the summer vacation at home (231 regularly and 85 irregularly) the percentage ascended to 6.7% and was even inferior to that which would have been obtained without any prophylactic auxiliary.

Also by the aid of the doctors of the Institution Visconti of Modrone the prophylaxis was performed in the schools of some commons, particularly of Metaponto and Taranto (Lecce) with good results.

Scholastic prophylaxis is also observed in Algeria and in the Indies.

I do not insist upon the utility of antimalarial prophylaxis, I only remember that it does not only reveal, with new observations, the efficacy of quininic prophylaxis, but aids in fighting against children's malaria, which preoccupies above all, for its frequency and damages and in forming and reinforcing the antimalarial education of the folk.

Antimalarial prophylaxis in schools cannot only be accomplished by the quininic prophylaxis of malarial pupils, but also by mechanical prophylaxis of schools particularly of evening schools.

Towards a thorough antimalarial hygiene in schools one must consider the schoolmaster's hygiene; of great use is therefore the quininic prophylaxis of schoolmasters and the mechanic prophylaxis of the houses of schoolmasters and of the schools annexed to schoolmasters' houses. The hygiene of a schoolmaster accomplishes the hygiene of his pupils, not only he is a bright example to his scholars, but avoids on the prophylactic principle that the master himself should be a source of infection to the scholar.

Conclusion. The diffusion of antimalarial teaching and scholastic antimalarial prophylaxis in many Italian provinces and other civil countries, and the goodness of the results are a shining demonstration of the utility of these *new means of struggle which I have invented*, which represent a new chapter of malarialogy and hygiene, which can be

called: *Scholastic Malarialogy* or in a more restrained meaning, *Scholastic Antimalarial Hygiene*; which impose on me the duty of more contributing with my energies to their diffusion.

For this reason I have tried in this Congress to recall still more vividly the attention of the scholastic hygienists of the civil world on my initiatives and renew more largely my appeal to school doctors and cultivators of scholastic hygiene in all malarial countries that they might introduce in schools these new prophylactic means and offer their intellectual tribute to scholastic antimalarial hygiene.

To this purpose I submit to the approval of the Congress the following notice:

"The Fourth International Congress on School Hygiene in Buffalo, considering the efficacy and diffusion of the scholastic antimalarial hygiene, initiated in Italy, expects that antimalarial teaching and scholastic antimalarial prophylaxis, the utility of which was proclaimed in the last Congress of Paris, shall be diffused in all malarial countries and that by the State initiative they shall become compulsory in the countries which have been so heavily injured by the malarial enemy."

SESSION TEN

Room B.

Wednesday, August 27th, 9:00 A.M.

INSTRUCTION IN HYGIENE (Part Two)

ALVIN N. WHITE, *Chairman*

DR. FRANKLIN C. GRAM, Buffalo, N. Y., *Vice-Chairman*

Program of Session Ten

ALVIN N. WHITE, A.B., State Superintendent, Department of Education, Santa Fe, New Mexico. "Western Problems in School Hygiene." (Manuscript not supplied.)

DAVID SPENCE HILL, Ph.D., Director, Department of Educational Research, Public Schools, New Orleans, La. "A Plan for Coöperation in Educational Hygiene Between Municipal School Authorities, and Medical and Educational Departments of a University."

ELEANORA EVERHARD, A.M., M.D., Honorary Chairman Committee for Public Health Education Among Women of the American Medical Association, Dayton, Ohio. "The Relation to School Hygiene of the Work of the Committee for Public Health Education Among Women of the American Medical Association."

PAUL RADOSAVLJEVICH, Ph.D., Assistant Professor Experimental Pedagogy, New York University. "Experimental Pedagogy and School Hygiene."

ARTHUR VERNER, A.B., Superintendent of High and City Schools, Pontiac, Ill. "Some Problems in Child Hygiene and Their Relation to Education."

I. EDWIN GOLDWASSER, M.S., M.A., Principal Public School 62, New York City. "Pupil Coöperation Indispensable in Enforcing Hygienic Regulations."

SAMUEL D. RISLEY, M.D., Ph.D., Emeritus Professor Diseases of the Eye, Philadelphia Polyclinic and College for Graduates in Medicine; Attending Surgeon Wills Hospital for Diseases of the Eye, Philadelphia, Pa. "Good Vision as a Factor in School Progress."

RANDALL D. WARDEN, B.S., Director of Physical Training and Director of Public School Playgrounds, Newark, N. J. "Why Give Sex Instruction in High Schools?"

Papers Presented in Absentia in Session Ten

(Read by Title)

Prof. MANUEL VELAZQUEZ ANDRADE, Mexico City. "La Educacion Sexual. Lo que en Mexico se ha hecho a este respecto."

Prof. MANUEL VELAZQUEZ ANDRADE, Mexico City. "Alumnos Reprobados en las Escuelas Elementales del Distrito Federal." Ano Escolar de 1912. Ensayo de Higiene Intelectual.

LEE K. FRANKEL, Ph.D., Sixth Vice-President Metropolitan Life Insurance Company, New York. "Education of School Children in the Principles of Hygiene."

A PLAN FOR COÖPERATION IN EDUCATIONAL HYGIENE BETWEEN MUNICIPAL SCHOOL AUTHOR- ITIES, MEDICAL AND EDUCATIONAL DEPART- MENTS OF A UNIVERSITY

BY

DAVID SPENCE HILL

An Educational Experiment. The plan to be outlined was a successful experiment for the time and place where it was applied. In a city of about one third million population, the largest city of the South, with educational conditions rapidly improving but with peculiar difficulties before the school authorities, the plan was effective in inaugurating a knowledge and practice of school hygiene in some of its most modern aspects. The year during which the plan was in operation included some disappointing failures but on the whole this coöperative undertaking encouraged by the public schools of New Orleans is worth recording, both for the sake of describing the method of organization and also because of practical results obtained. This brief summary, for convenience, will comprise in successive order discussions of propaganda, the specific, fourfold tasks undertaken and some further concluding observations.

Propaganda. An advantage in the situation at New Orleans, which like other southern cities for more than two score years has been crippled by the effects of the Civil War, is the open-mindedness of its citizens who realize that the schools may profit by the experience of other cities, which, with more placid history, have performed many experiments in education. It is possible thus to avoid the exploitation of fads and the costly learning process of trial and error which have afflicted some cities where groups of agitators in education have spurned conservatism from the first. It seems that in New Orleans a people who have been esteemed conservative are readily and wisely choosing the best fruits of science. A healthy realization of needs and a combination of destructive and of constructive criticism are there manifest.

A propaganda of educational hygiene in its wider aspects was carried forward spontaneously with the encouragement of public school authorities, teachers, a university president, a dean of the medical department, certain interested professors, other officials and public spirited citizens. There was no formal understanding in the matter and a few complacent holders of sinecures under the "culture and discipline" banner of educa-

tion regarded the evidences of activity in school hygiene with indifference or with appropriate levity.

New Orleans has vigorous civic and educational associations, as The Parents' Coöperative Club, the Public School Alliance, the New Orleans Educational Association, the Era Club; all of which during the past three years have set apart time for discussion of aspects of the topics of school hygiene. The press of the city, although divided in political issues, were liberal in reporting lectures and addresses bearing upon the general theme.

For some years the Department of Medical Inspection of the public schools gradually has been endeavoring to enlarge its work, and with the coöperation of volunteers among skilled physicians, has stimulated appreciation of health as a basis of education. The age-grade distribution charts of the Superintendent of Schools and his statistics disclosing the status of maladjustment or retardation, of repeating and of elimination in the grades, for three years have focused the attention of students of educational science in New Orleans. The Superintendent and the Public School Alliance coöperated in calling a mass meeting of citizens and officials in the fall of 1912, where there was given an analysis of the problems of elimination, retardation and repeating in the schools and emphasis was laid upon the unprovided for presence in our schools of the exceptional child—the child who exhibits extreme individual variation, whether he be backward or gifted.

A Fourfold Undertaking. The intelligent interest in the situation exhibited by so many professional workers crystallized into a formal agreement for a year entered into by the Board of School Directors and the Board of Administrators of Tulane University which is an institution maintained by endowment. By this the writer, then the Professor of Psychology and Education in Tulane, was authorized to nominate an Assistant Professor under the year's agreement to assist in the coöperative work as directed by him; a joint fund of \$3,000 was contributed by the boards and it was agreed that three directions would be given the experiment: (1) Statistical investigations; (2) medical, sociological and psychological studies of individual, exceptional children; (3) systematic instruction of teachers and prospective teachers in school hygiene. The services of specialists from the university and the use of recitation hours in the New Orleans Normal School were made available. The laboratories of the School of Hygiene and Tropical Medicine and of the Callender Laboratory of Psychology and Education in Newcomb College, a division of Tulane, were utilized. The Touro Clinic, an independent institution, through the courtesy of physicians in charge, rendered many services, all without compensation. Later was added

a fourth feature, a lecture course in educational hygiene for prospective medical inspectors among the Junior and Senior classes of Tulane University.

It will suffice in this paper barely to outline the work accomplished during the year in these four directions and then to tabulate a few concluding observations.

I. *Statistical Investigation.* The published tables of the Superintendent during the year 1911-12 show that some 46 per cent. of the 40,000 children in our schools were over age for grade. His report for the preceding year shows that 35 per cent. of the children had occupied more than the allotted time in reaching their station in the grades—that is, were repeaters. As in many other cities heavy elimination from the schools was disclosed. The medical inspector's reports also brought to light the presence of large numbers of defective children. It was thought best for our purpose to begin attack at the problem of the exceptional child. And, therefore, a preliminary census of exceptional children was undertaken.

The purpose of this census was to put on record the opinions of the teachers, to call to their attention the actual presence and needs of markedly exceptional children, and also to secure a definite basis for ameliorative efforts. The allegations of the teachers regarding the numbers of such children made it possible to locate readily in the schools and grades children most obviously demanding special attention. Carefully prepared circulars of instruction and blank forms were sent by the Superintendent to each teacher and principal in the city. The following is a copy of the letter of direction sent by the Superintendent to every teacher. The classification adopted was of course arbitrary and crude, merely as adapted to the purpose in view.

PRELIMINARY CENSUS OF EXCEPTIONAL CHILDREN NEW ORLEANS PUBLIC SCHOOLS, 1912.

TO THE PRINCIPAL AND TEACHER:

1. Please fix clearly in mind the five kinds of exceptional children tentatively classified below.
2. Let every teacher, with the assistance of the principal, fill in carefully upon the accompanying blank *all the required facts* for her grade.
3. Let the principal collect the blanks from each grade and enter all the figures upon the blue blanks for principals.

PLEASE RETURN PROMPTLY ALL THE BLANKS TO THE SUPERINTENDENT.

It is understood, of course, that the opinions of the teacher or principal, through given carefully, are unofficial and are merely preliminary to more scientific studies which may be made afterwards in individual cases.

Such studies of children will be made only with the consent of parents, approval of Superintendent and by appointment made at Newcomb Laboratory of Psychology and Education.

CLASS A.—Feeble-minded or insane children who should be under institutional or home care, rather than in the public schools.

CLASS B.—Backward children (not in Class A.) or those who urgently need special educational methods in special classes within the public schools.

CLASS C.—Exceptionally able or gifted children.

CLASS D.—Incorrigible, habitually vicious children.

(a) Who seem to be of defective mentality.

(b) Who seem to be of normal mentality.

CLASS E.—Children of apparently good intelligence, but suffering obviously from some serious physical defect, temporarily or permanently unfitting them for the work of the grades.

(1) Defective vision.

(2) Deaf and semi-deaf.

(3) Suffering from speech defects.

(4) Crippled children.

(5) Epileptic.

JOSEPH MARR GWINN,

Superintendent.

Nov. 21, 1912.

The teachers coöperated promptly and as a rule carefully. The results were checked and tabulated. The census was printed finally upon a large sheet 34 x 11 inches, which displayed at a glance the numbers of exceptional children alleged in each school of the city and also the totals for the whole city. This sheet was sent to every school in the city, was widely quoted and republished in condensed form, arousing much interest in the cause. The grand totals only for all of the schools of the city, expressed in numbers and percentages are seen in Table I.

II. *Individual Studies of Children.* During the year, time and means made possible only the study of typical cases selected mainly from Class A, Feeble-minded. An earnest effort was made to avoid the unsafe procedure of depending too much upon the measurement of mere performances in the psychological laboratory in the attempts to classify children, to discover the causes of conditions noted and to find the best means for mitigating defects. No decisive contribution was attempted to the psychology of tests, but a distinctive feature of the psychological clinic conducted under the coöperative plan was insistence upon actual data to be obtained in writing from parents, teachers, physicians, sociologists and psychologists for each case studied. Since these data were obtained in nearly every case from volunteer workers, the success of the plan at least in this particular was gratifying.

In practice a series of blank forms was used. These forms were adapted from the well-known blanks used by Huey, Goddard and others, with the exception of a few which were created *de novo* for our special needs. The outfit comprises: Form A, blanks for preliminary census; Form B, application blank for clinical study; Form C, Medical Inspector's last record with supplements for special medical examination; Form D, entry record blank; Form E, anthropometric tests; Form F, record blank for revised Binet tests. It should be stated here that no undue weight was placed by the Director upon the isolated results of the Binet tests. Some of the Healy tests as well as other psychological means were also utilized. The whole findings, however, were summarized only in the light of the medical, psychological, social and school reports contributed by respective workers. Form G is a school report to be filled out by the teachers; Form H, blank for home and personal history, information to be obtained from parents, relatives, etc., by social investigators. This blank contained a convenient schedule for tabulating facts of heredity, a form devised by us.

During the half year in which individual studies were made there were some 67 applications. There was a readiness upon the part of parents for these studies and in no case was a study made except upon written request of parent, teacher and Superintendent.

About 50 cases were studied according to the procedure described, by June, 1913, although of course no record is yet complete. The total results so far will be published shortly. For the sake of brevity we are able to quote here only two summaries, selected at random from these cases. It should be understood that after each summary was drawn up a conference was held between the Superintendent, teachers, parents and the staff of the psychological laboratory, when the findings were gone over frankly and as tactfully as possible by the Superintendent.

CASE NO. 135.

BOY, AGED ELEVEN YEARS SEVEN MONTHS.

"School Report. The school report in this case indicates that the boy has a reputation of being quarrelsome, active, moody, excitable, changeable in mood or character, sly, lazy, slovenly, talkative, generally destructive, heedless of danger, laughs without cause, lacks self-control, generous, noisy. His teacher says: "His deportment has ranged between unsatisfactory and failure from the time of his admission into the school, his conduct in the class room at times being such as to operate as a detriment to the other pupils, besides disturbing the discipline of the school, for he is disobedient immediately after admonition has been given. While the child is mentally capable of doing the work that is obtained from his class he will not concentrate his mind on his work, and to this disinclination to apply himself, is largely due his poor scholarship. His condition is to be regretted as it not only defeats the very purpose of his presence in the school, but also is a disturbing factor in direct conflict with good order and disci-

pline. He frequently leaves the room just as his class is about to have a recitation and remains out of the room for a period of about twenty minutes. "He does not do well in manual or industrial work, gymnastics, athletics, entertainment work." His best work is in geography and history; his worst work in arithmetic and English. Lack of attention and disinclination to apply himself are assigned by the teacher as the cause for these failures. He plays considerably and usually undertakes the lead. In emergencies he becomes confused and loses self-control. In a fire drill he is said to lose entire self-control. He exhibits certain original ideas in regard to the organization of clubs, but fails in execution. He is fond of reading and singing to the extent of interfering with other duties. Shows little willingness to coöperate when aided. Coaching in the afternoon by the teacher has failed to improve the child's work.

A second school report more than a month later does not indicate improvement. He is inattentive, continues to avoid work by leaving the room, is in constant trouble and disobeys both general instructions given to class and individual instructions given to him. The teacher thinks his disinclination to class instruction is largely due to his nervous condition and she suggests that he be not kept in the classroom with other children until he is in better physical condition.

"Home Record. The family of this child is apparently in good circumstances; the mother, who came with the child to the laboratory, seems to be physically and mentally strong. She reports that the child walked and talked at about 11 months, got first teeth at about six months; no untoward conditions attending birth. She further reports that the child had St. Vitus dance at about seven years of age; he has a very poor appetite; has bad headaches; at certain times will become dizzy, headache following the dizzy spells. She further reports that the child had convulsions at between two and three years of age, which were attributed by her physician to his nervous condition. She also reports that the boy last year had malaria and was several weeks in bed. In disposition the home record says that he is trustworthy, cheerful, neat, excitable, affectionate, obedient (compare with school report), talks in his sleep. When threatened with whipping, child becomes nervous and is unable to eat. The child is not fond of out of door exercise, but likes to read best of all.

"Medical. This report indicates that nutrition is good, general development fair; hypertrophied tonsils, right and left; adenoids have been removed; enlarged cervical glands; frequent headaches; very nervous. There is a history of measles and of convulsions. Speech is clear and fluent; expression is intelligent; posture stooping, gait normal.

"Special medical examination revealed tonsils "enormously enlarged," adenoids absent, nasal septum deviated, respiration impaired, hearing slightly deficient. Removal of tonsils was urged. Examination by oculist resulted in prescription of glasses for constant wear. Special examination at the Touro gave as findings: Blood negative for plasmodia and count normal; Urine S. G. 1016; indican, otherwise negative other than it shows that at times he suffers from eating excessively of meat, eggs or milk; Feces negative for ova and parasites. A positive Wasserman reaction means that he needs treatment for congenital lues (syphilis). It was advised that the boy should be referred to a physician or to a medical clinic for treatment. A last report from a neurologist in substance states: "Child had chorea at the age of 5, but recovery seemed to be complete. Examination showed slight heart murmur with enlargement of this organ and moderately enlarged tonsils. The child is afflicted with a very mild chorea form affection of the upper extremities, face and tongue. I am of the opinion that this is a case of incomplete recovery from chorea. Am unable to see any after effects of the convulsive condition. Mentality seems to be good. The choreiform condition

should be treated by a competent physician, but it does not seem to be imperative to remove the child from school at present.

"Psychological. The form-board work in this case showed good speed and improvement. His general method of handling this task showed superior adaptability and alertness. His mental grasp is good and his answers show a somewhat mature judgment. His range of information indicates an inquiring mind. His mental acumen, curiosity, and discrimination are evident. He is quick to employ short cuts and adapt means to an end. He is inclined to shrink from sustained effort and is inclined to become fatigued, with a consequent loss of interest. This characteristic was not severe enough, however, to be considered pathological, but may be attributable to a quickness of mental operations. The association tests show logical mental processes and a good range of ideas. Some association processes were rather persistent. The studies as a whole show that mentally this boy is at age if not slightly above.

"Recommendations. The medical findings in this case seem to be more significant than any other. The recommendations in this line should be carefully carried out so as to remove as far as possible the adverse physical conditions reported in the findings of the medical specialists. The disciplinary problems connected with his school work should, as a first hypothesis, be assumed to rest on these conditions and the child should now be handled accordingly. In case these conditions can be successfully treated he should be expected to attain good success in his school work. The early medical history of the case and the present neuropathic symptoms go to show that he should be kept under a constant and competent medical care. It is suggested that either the boy be removed from school and kept healthfully occupied at home under the supervision of a physician, or that he be sent to another school where the effects of a change of environment and course of study may be tried. Emphasis, however, should be laid upon securing sound health for the boy."

CASE NO. 317.

BOY, AGED THIRTEEN YEARS SIX MONTHS.

"School Report. It is reported that the boy has been for years a difficult problem for his teachers. On account of lack of progress and the constant repetition of grades, the boy is reported as being exceedingly difficult for his teachers. Recently he has been asked to withdraw from school. In school he has been unable to learn the alphabet. He cannot count or do any mathematical work. The teacher says, "He likes to do and not to think." He takes some interest in pictures and play, but lacks concentration and is incapable of sustained interest. In disposition he is reported as being morose, active, obstinate, sensitive, moody, excitable, sly, resentful, slovenly, mouth breather, lacking in self-control, apprehensive, awkward, stupid, slow. He is a disorganizing factor for the school teasing and pinching legs of students, being dirty and a trial to teachers and pupils.

"Home Record. There is history of ill health in this family, including tuberculosis, paralysis, cancer, etc. In infancy the boy learned tidy habits very slowly. Now has weak spells and sick headaches. The bread-earning mother of the boy is away from home, at work, and the boy roams the streets. The mother says he is easily led, that he runs away, has fits of temper, but is generally cheerful and affectionate. He is "afraid of a stick, and can be conquered in that way." "Goes to moving pictures and remembers what he saw there." The mother is willing to be put on record and quoted. Her statement was about as follows:

"I am a working woman and have tried always to do the best for my children. I am the support of the family, as my husband is an invalid, and am occupied with my business, which keeps me away from home nearly all day. While I am at my work my mind is never at rest on account of ————. I never know what is going to happen to him while I am away. The principal has refused to keep him at school and he is getting so big now that he will roam in the streets when I am not at home to keep him there. He is very good-natured and will do anything anyone tells him. The boys in the street know this and they get him into all kinds of trouble by making him do things he should not to—things they are afraid to do themselves. I don't see how I keep my mind with it all. ———— is not a bad boy and he is industrious and can be taught to do things. What he needs is to be in some institution where he will be taught to be useful and where he will be kept away from bad boys who lead him into mischief. Though a day school is better than no school, still the good accomplished during school hours will be undone during the hours between school and bedtime, when, sooner or later, he will fall under the influence of hoodlums in the streets. I think it would be a great thing for the state to establish some institution for the care and training of such children as ————. It won't cost the state any more to provide such an institution that it does now to provide prisons and jails for wrongdoers. I am not as young as I used to be, and if anything should happen to me, what would be come of ————? My other children are boys and they would not watch him as I do and he would be led into wrongdoing. There is no telling what he might be led to do under the influence of evil persons. This is always on my mind and I dread the future for the child. I will gladly do anything I can to assist in the establishing of such an institution. I think that every mother who has a child like ———— should think the matter over and assist in some way in the establishment of such a home, or training school, or whatever else it might be called."

"Medical. General medical and physical examination shows fair development, early malnutrition, caries of teeth, mouth breathing, enlarged cervical glands, cephalic index 72. A specialist recommends for the present no operation for a deviated septum. Stammering and stuttering of the spastic type. An eye specialist found convergent strabismus, with unsatisfactory retinoscopy owing to lack of attention. An examination by a specialist in nervous diseases resulted in the finding of paralysis of an eye muscle and the general diagnosis of congenital feeble-mindedness.

"Psychological. The first form—board tests were done slowly and with hesitation; there was a tendency to discouragement and little improvement. On a subsequent visit to the Callender Laboratory he was able to work these tests more quickly, although more slowly than boys of his age on first trial. Similar tests with pictured shapes indicate some appreciation of form and significance, though the finer discriminations were not observed with the objects closely resembling each other. In some of such tests there were absurd mistakes. His responses to the Binet tests are those of children a half dozen years younger. He has been in school five years and is yet unable to read and does not know the alphabet, although he recognizes numbers up to nine. Pictures evoke considerable interest and he is even able to interpret some of them. He defines familiar objects in terms of use and can obey simple directions.

"Recommendations. The recommendations of the specialists concerning nose and throat and the diagnosis of the neurologist have already been noted. The boy is now out of school and there is no proper place in the state to send him. He should be humanely cared for, his meagre capacities for work, especially in manual activities, should be developed toward self-support, and he should be protected from evil-doers

and evil-doing. He should be sent to a good school for the training of feeble-minded children. It is lamentable that there exists no institution in our State suitable for such cases. His outlook, therefore is dismal, and there is prospect that society will suffer because of him.

III. *The Instruction of Teachers in School Hygiene.* As a part of the coöperative plan a series of 90 lectures was delivered in the New Orleans Normal School by instructors from the University. A professor of hygiene and tropical medicine, a professor of psychology and education and an assistant professor of experimental and clinical psychology each delivered 30 lectures to a group of 125 students. One-third of the course dealt with the hygiene of the school child from the standpoint of the physician, another third concerned the hygiene of instruction and certain administrative problems, the remainder of the course had to do with the problems of mental deficiency. Similar courses were given to other groups of students and teachers at the Newcomb College of Tulane University.

IV. *Instruction of Prospective Medical Inspectors.* A mere beginning was made at this point but it is hoped that the effort is worthy of attention. The writer of this paper recently published a symposium in *Science*, December, 1912, which indicates the growing need of coöperation at certain points in the training of teachers and of prospective medical inspectors in our American universities. One source of partial failure of medical inspection as conducted is perhaps the utter lack of systematic training of most physicians in the elements either of educational science or in modern psychology. It was agreed during the year to make a mere beginning in remedying this need by attempting a short course of lectures before medical students. The writer therefore was invited to this task by the Dean in charge of the School of Hygiene and Tropical Medicine in Tulane University. It is believed that these lectures, which were delivered once a week during a period of some six weeks, were received with appreciation by the large group of junior and senior medical students. The lectures were prepared with syllabi for distribution to the students, and each syllabus contained a brief bibliography, the aim being to introduce the students to these problems and to introduce them intelligently to intensive studies. Here follow the topics as announced:

Some Educational Problems of Interest to the Modern Physician and Sanitarian.

I.

Introductory: Psychology, Philosophy and Pedagogy;
Scope of Each and Practical Relations.

II.

Elimination, Retardation and Repeating in the Public Schools of America.

III.

The Argument For and Conduct of Medical Inspection.

IV.

The Discovery, Significance and Educational Treatment of the Exceptional Child.

V.

Psychological and Practical Aspects of Habit.

VI.

Mental Work and Fatigue.

Concluding Observations. In conclusion we make the following tentative observations. This coöperative undertaking was made possible by the wholesome combination of civic spirit and scientific interest upon the part of many skilled men and women, especially including Doctors Dyer, Butterworth, Moss, Feingold, Joachim, Lemann, Van Wart, Hummel, McIlhenny and others; social and statistical workers, Misses Railey, Gillean and McMain, and Mrs. McConnell; Superintendent Gwinn and the scores of principals and teachers. However, experiment shows that the weak spot in executing a coöperative plan like this one is in the administrative side. It is necessary for the scientific integrity of the work to centralize the control of every detail. In New Orleans we have thought it best at the end of the year to organize the Department of Educational Research within the public schools, and further execution of our task, in somewhat changed scope, will be undertaken with the help of this department, now that the formal agreement with Tulane has ended. It is believed that the creation of a department of educational research is one of the marked successes of the coöperative activities.

It seems also that two of the special dangers confronting administrators who are taking up the problem of the exceptional child in the schools are these: *First*, scores of dilettante enthusiasts and not a few half baked students of psychology and of pedagogy are flocking here and there to acquire during a summer school some special knowledge

of recent methods. Occasionally such individuals reappear, posing as clinical experts, and by means of the Binet and similar useful devices, want to classify and segregate children. They endorse theoretically the value of medical, sociological and any other kind of data bearing upon the history of the case, but do not obtain the information. Classification and segregation of children by such persons is distinctly dangerous and their efforts are likely to set up a reaction against the whole movement upon the part of the public and of scientific men. The *second* danger is that the auxiliary and special classes intended for merely backward children, temporarily handicapped, will be filled up with imbeciles and even idiots, so that in a few years the condition of population in these classes will be very objectionable. It would seem that a preventive of these dangers would be organized, scientific provision for the study and classification of exceptional children, followed by constant readjustment and plasticity in the administration of courses of study and methods of teaching in the schools. Our experiment of one year in New Orleans has not gone very far in the ultimate solution of our educational problems. But it is an evidence of what can be accomplished under adverse conditions where there exists a group of professional men and women who will join heartily in a plan for the coördination of efforts in behalf of the welfare of all of our school children.

THE RELATION TO SCHOOL HYGIENE OF THE WORK OF THE COMMITTEE FOR PUBLIC HEALTH EDUCATION AMONG WOMEN OF THE AMERICAN MEDICAL ASSOCIATION

BY

ELEANORA S. EVERHARD

I wish to express appreciation for the invitation to present to this audience the work of the Committee for Public Health Education.

The object of the Association for School Hygiene is to improve the hygienic conditions surrounding children during school life.

The attainment of this object is dependent upon several factors. First, of course, is fairly exact knowledge of results to be expected from hygienic measures which might be enforced with profit. The more accurate such knowledge the better. Herein is to be found a fascinating field for investigation too little cultivated, I believe. But with knowledge which is far from exact, if effort be in the right direction, much may be accomplished. Before one knows exactly how much moisture per cubic foot of air is needed in a school room, it may be possible to overcome absolute dryness.

Another factor in the attainment of the object of this association, and one which is indispensable, is the coöperation of the people.

It is estimated that in the year 1913 1,500,000 persons will die of preventable disease. This loss of life will be due in part to lack of knowledge in the victim, in part to willful disregard to laws of health, and in large part to the defenselessness of the innocent in the presence of ignorance and willfulness.

The people must learn that while scientists may discover causes of disease and devise methods of prevention, only by themselves can they be saved from their own sanitary sins. General education in health matters and more or less thorough understanding of their relation to the daily life of the individual is essential to appreciation of the efforts of physicians and sanitarians.

Those whose especial coöperation must be had in school hygiene are the parents and the teachers, for even teachers have been known to keep the temperature of the school room at 75°. But without the conviction and the interest of the community our most cherished preventive measures fail. After all, of what avail is medical inspection of school children if the community sanctions disease, or the exclusion

of contagions from the school room if they are permitted on the street, or bubbling fountains in the school house if there is a tin cup tied to the village pump?

For the protection of the health of the community statutory regulations are wise and just; but laws are enacted only at popular demand and if enacted without the support of public opinion they fail of enforcement. General education of the public is necessary to insure better health legislation.

It is neither possible nor desirable to make of each individual his own sanitarian, but we may hope to help him to see the need for sanitation and to quicken an appreciation of training in the officer who is to be custodian of the common health. Reasons for failure of legislation to protect the health of the people are plain. Almost universally the health officer is paid a salary so small that no competent physician can give the time required without financial sacrifice. Too often the health officer is a political appointee who cannot be expected to enforce the law when his partisans are involved. The people must be educated to recognize the value of service rendered before they will either employ physicians fitted to do the work required or be willing to submit to sanitary regulations which they have themselves made.

Rural sanitation and rural schools might almost be said to present a virgin field so unencumbered are they by our efforts in their behalf, while the milkman makes his daily contribution of tubercle bacilli and home-coming hosts of pleasure seekers bring their harvest of typhoid because people still labor under the delusion that the rural districts are germ free.

Education of the people is an essential factor in the attainment of the object of this association. This is the problem which the Committee for Public Health Education is seeking to solve.

To-day information is available to the medical profession which begins with the cradle and by ordering the life of the infant in its detail may give the child a better start than was possible a generation or two ago; by watching eyes, teeth, and respiratory tract, he may be guided into a safe childhood; through the school period information suffices to guard him against the formation of bad nerve habits in the class room, or muscular strain in athletics as well as dangers from unhygienic surroundings. When he becomes a part of the great business machinery of the world, medical information is sufficient to protect him from diseased fellow workmen, and to teach him to meet the requirements of hygiene upon which his physical vigor depends. Large numbers of physicians are esteeming it a privilege to teach these facts to the people.

To be able to do this more effectively, this Committee is organized

with a Central Committee, with State Chairmen, and so far as possible, with Committees in the County Medical Societies.

The Committee has sought to avoid multiplicity of organizations by working through existing channels and in line with existing interests when possible.

Assistance has been given in preparing programs for study of health subjects. Speakers have been secured for any audience of men, women or children who are interested enough to extend an invitation. When such interest is lacking the committee seeks to arouse enthusiasm. Audiences have been found in literary clubs, mothers' clubs, church clubs of men and women, Y.W.C.A., Y.M.C.A., civic clubs, factory clubs of men and women, Chautauquas, farmers' associations, teachers' associations, public schools, normal schools, colleges, and among the general public. The newspapers have in many places been glad to print popular articles on timely subjects. Operators of moving picture shows are often found willing to coöperate. The public have also been educated in some places with a definite end in view, such as the removal of the public drinking cup, the erection of a sanitary school building, medical inspection of schools, a plan for restaurant inspection or other measures to secure better civic sanitation.

The Subcommittee on Medical Literature has prepared a list of books containing the names of two hundred and fifty-seven popular works on hygiene and sanitation. These books have been carefully reviewed and only those have been included which give authentic information in form which is interesting but not sensational. These lists have been sent to all libraries not technical and containing 5,000 or more volumes and, at the request of the State Library Commissions, to all the smaller libraries in two states. County Committees have, with local librarians, prepared abbreviated lists for the use of the busy reader. In many counties traveling libraries of Hygiene have been sent from town to town.

The Committee has been willing to discuss any phase of preventive medicine in which the audience is interested. Study of the Annual Reports for the past two years brings to light certain facts which are suggestive. The report for the year ending July 1st, 1912, showed that in those areas which had received least instruction, the most popular subjects were those which deal with the causes and quarantine of contagious diseases. In those areas next in order in the amount of instruction, people were interested in those things by which their defenses may be made strong against disease. Discussions of nutrition, foods and kindred subjects were most popular. Areas which came next were interested in Social Hygiene and those areas which, for any reason, had longest received instruction were beginning to talk about Eugenics.

This was before the country was swept by the wave of interest in Sex Hygiene, so called. It is noteworthy that normal interest in this subject and Eugenics seems to be a superstructure on a foundation of some knowledge of general hygiene. We believe that when interest in these subjects is apparent without such foundation it should be treated at least with circumspection.

The report for the year ending July 1st, 1913, shows that those areas which have been best organized and under instruction for the longest time have this last year been given over to health legislation, either local or statewide. This legislation has had to do with public schools, boards of health, and social hygiene.

During the year 1912-1913, audiences aggregated over 600,000. With forty-seven states and four hundred and fifty counties organized under this committee, talks to Mothers' Clubs are reported from thirty-five states, talks to teachers' associations from twenty-six, and talks in the public schools from twenty-four.

Legislation in regard to school hygiene is reported among results sought by this committee in twelve states. In nine states such legislation was passed either locally or by the state.

This committee is glad to coöperate with organizations whose object it is to educate the people in the prevention of disease. Such coöperation may be had through Dr. Lenna L. Meanes of Des Moines, Iowa, now the Chairman of the Central Committee, through the Public Health Education Committee of the County Medical Society, or through the President or Secretary of that Society.

That education of the public is worth while has been shown in the flooded cities of Ohio where, almost without question, sanitary regulations were obeyed.

That hygiene and sanitation are effective has been proven in those same cities. Exercise, fresh air, and sleep were had in abundance for four or five weeks. Mud to be shoveled, broken windows, and an early curfew made sure of these. Food was simple and limited in quantity. Stringent sanitary regulations were enforced. Boards of Health records for the three months following the flood show that there were no epidemics and little illness of any kind, in some cities less than in previous years during the same months.

As to the future, small towns and rural districts are interested and, as yet, almost unreached by information. United effort for some years to come will be insufficient to meet the opportunity.

More careful study and more widespread teaching are needed in all branches of hygiene but especially in those upon which "scientific management" of the human machine depends. Not only must parents realize the importance but teachers who have supervision of

habit formation, for their own welfare and that of their pupils, must learn rational and practical mental hygiene. To investigate and to teach the best methods of securing results in this field is the especial privilege of the Association for School Hygiene. We look with confidence to this Congress for an effective stimulus to that end.

EXPERIMENTAL PEDAGOGY AND SCHOOL HYGIENE

BY

P. R. RADOSAVLJEVICH

I. *Introduction.*

It is the fashion, at present, to make schools responsible for all social evils, all vices, all sufferings and even all crimes. The businessmen and parents are criticizing school education from their standpoint. Teachers are scoring it from the viewpoint of practice, psychologists from theoretical considerations, moralists from an ethical basis, and sociologists from the basis of their theories. Even the anarchists make pleas that they are the victims of present school institutions, and their careful principle is that society with its schools, and not nature, is the cause of the physical, intellectual and moral inequalities among men.

But almost all of them forget the fact that *school* education is only part of education in a broader sense, which includes education by nature, home, society, and self-education. Yes, there is no profession, no field of human thought and endeavor, in which the expression of half-backed opinion is more predominant and at the same time more disastrous than in the sphere of school education. It is extremely difficult to find any statements of facts, theories, hypothesis, or conclusions, either in the science (theory) or art (practice) of school education, which have been scientifically established. Instead of scientifically determined conclusions, we find surmises, conjectures and assumptions that are, or are not, confirmed by adroit reasoning.

In response to all this, only recently, progressive thinkers and thinking teachers and school physicians are striving for a basic point of view from which to attack the entire field of school education, for a rational mode of procedure by which they solve the problems which so beset them. As a result of this striving we have now, here and abroad, several important theoretical and practical movements, such as experimental pedagogy (experimental education, scientific or new pedagogy, experimental school didactics, Schülerkunde), school hygiene (medical inspection of schools), child study (paidology), genetic psychology, biological pedagogy, educational psychology, clinical pedagogy (Heilpädagogik, pathological education), individual (differential) pedagogy, social (cultural, universal) pedagogy, sex pedagogy, mission pedagogy, race pedagogy, international pedagogy, the Montessori pedagogy, the Tolstoy-Ferrero-Ventzel pedagogy (free schools), the Reddie-Lietz peda-

gogy (out-door schools), open-air schools, the Kerschensteiner pedagogy, Arbeitsschule or Tatschule (Doing-School), the Mannheim School System, etc.

As these modern educational tendencies are becoming more and more aggressive in all civilized countries, it is fitting for the present occasion to point out the nature, main representatives, and methods in Experimental Pedagogy and School Hygiene. These two educational tendencies are, in my mind, very close together and most fundamental both for the science of education in general and school education in particular.

2. *Nature of Experimental Pedagogy and School Hygiene.*

The best way to point out the nature of these two movements is to see what is their aim and problems. Their aim may be expressed briefly in the following words: *Hygiene of School Teaching and Economy of School Learning.*

In Experimental Pedagogy this means a thorough, scientific investigation (1) of *What to Teach, Why and When to Teach, and How to Teach* every school subject with special reference to the teacher's part in school educational work (*i. e.* the teacher's effort to explain school tasks to his pupils); (2) *How* shall a school task once explained by the teacher and understood by the class be mastered completely with the least expenditure of energy and saving of time on the part of each individual pupil? These fundamental questions involve a variety of more or less detailed problems such as: What school subjects ought to be included in kindergarten, primary and secondary grades? Shall we have the same curricula for city and country schools in America, Europe, Asia, Africa and Australia? How shall this be determined—by speculation or scientific comparison? What *pedagogical* basis shall we have for the selection and organization of subject-matter? What are the principles of modern reforms in school subjects of elementary and secondary schools? Why they are principally state, religious, economical, scientific or political and not pedagogical? When shall a child enter the school and at what age shall it begin to study different school subjects? Shall our school system be based upon division into 6, 6 + 6 years, into 6, 2, 4 + 6 years, or into 8, 4 + 6 years? Is the present tendency toward the organization of schools justified? How to determine it scientifically and pedagogically? What is the most hygienic way to teach a school subject? In teaching spelling, for instance, shall the teacher emphasize the function of auditory image and of auditory presentation or insist upon the value of the physiognomy of the word and of visual presentation, or call attention to the parts played by motor ideas; or shall she demand

the rule and the understanding of the etymology of the word? Is syllabification of value in spelling teaching? What is the value of the spelling book? Is print or script the best material for spelling presentation? Shall homonyms be taught simultaneously or separately? How many new words shall be given in each lesson?

Is the synthetic or the analytic method of teaching reading most psychological and natural? Shall we use the phonetic, the Look-and-Say-the-Word, the Sentence or the Story Method? Whence shall our material be selected? Shall print or script be made the basis of reading teaching?

What method in penmanship is most natural and most suitable for children? Shall we teach drawing separately or in union with the instruction in penmanship, art, real manual training and nature study?

Shall we teach number by counting (Zählen) or by visual number pictures (Zahlbilder)? Which perception cards are the best? What are the weak points in the Grube method, in Speer's method, in Dewey's, in Lefevre's and in Phillip's conceptions?

Shall history be studied from the cultural, the political, the chronological, the logical, the economic, the biographical or the social standpoint? How far shall maps be used? To what extent shall the study be correlated with geography? What use shall be made of visualization? What share does expression take in history teaching?

Shall the starting point in geography be economic, industrial, political, social, physical or mathematical? Shall we proceed from geographical and climatic features of human activities, or shall the human element be made the starting point? Shall we adopt the biological, the logical, the classification, the dynamic or the sympathetic methods in natural history instruction?

Shall teaching be mass or individual? Shall classes be composed of 5 or 50 pupils? Is the departmental mode of organization suitable for children? Shall we have group teaching or class teaching? What is better, home work or school work? Isolated learning or learning in the class room with other pupils? Shall the pupil learn his lessons at one sitting or in several daily distributive sittings? Shall he learn by the whole method or by the piecemeal method or by the mediate method? Why, When and How? Shall we insist on partial or complete learning? How and when shall pupils repeat school tasks once acquired?

What is the nature of school fatigue? Shall we judge the fatigue of pupils by ergographic, dynamometric, and aesthesiometric tests or by reaction time, addition of figures, dictation, simple translations, tapping, cancellation of letters, simple associations, memory tests?

Shall we promote and grade pupils according to the common school marks, teacher's general estimate of pupil's ability, or by single physical

psychophysical or mental tests only, or by a series of tests involving the principal psychical functions, viz: by the "psychoanalytic" method (seeking to adapt some common psychological experimental method so as to involve a test of the higher mental function indirectly) or by the "practical" method of Binet—Simon? Or by the German "Psychography"? What is really meant by intelligence? Is it inherited, acquired or both? Can we measure it? Can we distinguish "general" intelligence (*i. e.* innate, unspecialized mental efficiency) both from acquired knowledge, interests and dexterities, and from specific endowment, aptitude or talent? Is it true that environment is essentially indirect heredity? Are the differences between the bright pupils and dull differences in kind or in degree? Does chronological age coincide with the physiological or mental age? Shall we test intelligence by blood tests? Shall we deal with intelligence as a whole, or only with some of its higher capacities (*i. e.* ability to work with abstract material in a purposive way, seeing new relations and breaking old combinations)? Is there such a thing as a formal discipline, and of what pedagogical use is it?

Hygiene of teaching and economy of learning in School Hygiene deals (1) with the *general sanitary supervision of schools* and (2) with *individual medical inspection of pupils*, which may be divided into two groups: (a) *examination of new children* who are just entering school, and (b) *periodical examination and care of pupil's health and psychophysical development in the course of school life*. These fundamental problems involve also a variety of more or less detailed questions such as: Where to build a school house? What is the best planning of the school? Best method of ventilation, heating and lighting of schools? Most hygienic arrangement of the classroom, desk and seat, cloakroom, lavatory accommodation, sanitary conveniences, shower bath, teacher's room, playground?

When should the school begin? One or two sessions of instruction? Length and number of recesses and vacations? What form of physical school education ought to be enforced in the school curriculum? How far should the child see ordinary writing or drawing on the blackboard? How near and how far from the eye should the book be held? How large must the type or figure be in order to be used by the pupil with perfect safety? Is the teacher sure that each of his pupils can hear everything said? Is the inaction or slowness of some of them due to lack of motor ability or disease? How much school and home work should the pupil be able to accomplish at different ages and school grades without indications of fatigue? What are the most evident signs of school fatigue? What is the cause of pallor in child's face? Has each pupil been taught at home the principles of hygiene most essential for health? Does the teacher treat all pupils exactly alike

in the degree of hygienic precision required? What amount of work, mental or physical, is done by each pupil outside of school and how much exercise does each take? Does the pupil get proper food, clothing, bathing, sleep? How fast should pupils grow in stature and weight in each year? Is child's vitality and dynamic power normal?

These and many other problems indicate that the tasks of Experimental Pedagogy and School Hygiene are vital. The question is not only to teach and to learn something but to do this in the most hygienic and economical way, *i. e.* to reach school educational results with the least expenditure of psychophysical energy of both teachers and pupils. Only through empirical investigations of Experimental Pedagogy and School Hygiene will we be acquainted with the real nature of school children. Such investigations will free schools and homes from absurd notions about the nature and needs of the school child.

3. *The Main Representatives of Experimental Pedagogy and School Hygiene and Their Methods.*

The main as well as the most productive representative of Experimental Pedagogy is, no doubt, *Ernst Meumann*, now Professor at Hamburg, Germany. His "Vorlesungen" is now a classical work. The original laboratory studies by him and by his pupils in Zürich, Königsberg, Münster, Halle and Leipzig, are published in his "Archiv für die gesamte Psychologie," "Zeitschrift für experimentelle Pädagogik," "Zeitschrift für pädagogische Psychologie," "Pädagogische Monographien," "Sammlung," "Forschungen." Meumann's Experimental Pedagogy is based mainly on psychological methods (observation, comparison, measurement, statistics, experiment). By a pedagogical experiment he means an experiment in which the normal school child is the object, but of which the direct meaning and aim is the determination of pedagogical values and methods.

This kind of Experimental Pedagogy is propagated more or less in Germany (Brahm, Schulze, Messmer, Martinak, Stern, Offner, Lobsien); in France (Claparède, Binet, Biervliet, Joteyko, Richard, Schuyten), in America (Whipple, Burnham, Thorndike, Swift, Huey, Bell, Bagley, Colvin, Baird, Lough), in Hungary (Ranschburg, Nagy), in Bohemia (Kadner, Veleminsky), in Italy (Pizzoli, Kiesow), in Servia (Rajacich, Mladenovich), in Croatia (Mandich), in Bulgaria (Zoneff, Pentscheff), in South America (Mercante, Mann) and many others.

Experimental Pedagogy *plus* biological study of school children and educational problems is required more or less by President G. Stanley Hall, W. A. Lay, Dewey, Dean Balliet, Baldwin, Bergemann, Célérier, Dugas, Boutrou, Sergi and a few others. They require (1) that

the investigated conditions must approach as far as possible the conditions and relationships of the classroom, and (2) that all educational problems ought to be studied from the bottom, because the beginnings of such things are always interesting and instructive. As the mind, they claim, cannot fully understand the structure of an animal until we study the development of the embryo; as zoölogy and morphology are bound to start with embryology, we cannot grasp the mind of the adult until we study the development of the mind of the child; as psychology is bound to start with child study; as we cannot understand the social and religious life of civilized races until we study the development of the social and religious life of savage tribes; as sociology and theology are bound to start with ethnography—so we cannot understand fully the present psychophysical life of our school children until we study the childhood and adolescence of their forefathers and the savages.

All these authors are dealing mainly with the normal school children. There are, however, several men and women who are engaged especially in the study of the abnormal children. Here we have the works of Ziehen, Major, Heller (in Germany), Binet, Simon, Ley, Degand, Decroly (in France), Lapage (in England), Sancte de Sanctis (in Italy), Goddard, Witmer, Holmes, Wallin, Heally, Scripture, Haberman (in America).

The modern School Hygiene is represented mainly by Leo Bergerstein of Vienna, Griesbach, Janke, Kottelmann, Cohn, Suschny, Netolitzka, Baginsky (in Germany), Godin, Mathieu (in France), Warner, MacKenzie, Crowley, Steven, Hogarth, Kelynack, Hope (in England), Sikorsky, Bechtereff (in Russia), S. M. Markovich, D. G. Popovich (in Serbia), Bucar (Croatia), Sakaki (Japan), Gulick, Cornell, Cronin, Crampton, Storey (in America). Almost all of these authors wrote important books on school hygiene and medical examination of schools, the best of which are those of Burgerstein and Netolitzka, MacKenzie and Matthew, Gulick and Ayres, and Cornell.

Here also authors do not agree in regard to the methods and procedure. Some are for medical tests only, others want to add physiological, psychological and anthropometrical tests. School anthropometry (including cephalometry) is propagated especially by MacKenzie in England. In this regard we have many recent and older contributions not only by school physicians but also by anthropologists, teachers of physical training, psychologists and educators, such as: Boas, Hartley, Hitchcock, Beyer, Bowditch, W. S. Hall, Hastings, Goddard, Gilbert, Dawson, MacDonald, Moon, Smedley, Vines, Peckham, Porter, Sargent, Phillips, Seaver, Thorndike, Hrdlicka, West, Wissler, Wood (in America), Leon (Mexico), Engelsperger and Ziegler,

O. Ranke, Ernst-Hoesch, Koch-Hesse, F. A. Schmidt and Lessemich, Stratz, Monti, Rietz, Ammon, Ouirsfeld, Erismann, E. V. Lange, Geissler and Uhlitzsch, Carstädt, Schwerz, Samosch, Kottelman, Bayerthal, Pfitzner, Landsberger, Zeisig, Reuter, Lucae (in Germany), Godin, Bonnifay, Marage, Parshappe, Binet, Simon, Vaschide, Combe, Muffang, Oуетelet (in France), Gray and Tocher, Roberts, Venn, Galton, Beddoe, Windle (in England), Sack, Michailoff, Weissenberg, Vasilyeff, Tschrowskowsky, Viasemsky, Kosmowsky (in Russia), Matiegka in Bohemia, Zupanich (in Serbia), Pagliani, Graziani (in Italy), Axel Key (in Stockholm), Sutton, Booth, Greig (in Australia), Misawa (in Japan).

Numerous contributions of these anthropometricians have been used both by Experimental Pedagogy and School Hygiene in order to determine the rate of physical growth and to establish a standard of physical efficiency for pupils at different ages. Their ideal was to find out the "typical pupil" by means of observing standards on the basis of collective study of a large number of pupils of different ages, grades, sex, abilities, nationality, social condition, race, climate, country, etc. Such standards have been obtained in America, England, Germany, Australia and other countries. But now, individuality is for both Experimental Pedagogy and School Hygiene too sacred to be tied to an average, because to vary within certain, by no means small limits is an individual right, not a defect or a mistake. The very fact that the individual variations are the expression of fundamental general phenomena of life; that individualism in education, physical, intellectual or moral, is the oldest of the systems; this fact ought to be taken in account in all studies of Experimental Pedagogy and School Hygiene. And right here we made many errors. Almost all who studied for example, fatigue in school children failed to cope with the details of the situation engendered by the onset of fatigue, and insisted upon maximal speed of work by the subjects of their tests, in disregard of the fact that each individual has his own normal rhythm of work which may be entirely obscured by this demand for maximal efforts, so that what is tested is really an abnormal psycho-physical condition that does not present to us a clear picture of the properly working organism. Baade's experimental study shows that the concrete problems of the schoolroom related to the general problem of fatigue are very numerous. He distinguishes two main effects of teaching: *primary effects*, which belong to instruction proper, and *secondary effects*, which arise unexpectedly and accidentally, without having been contemplated beforehand. These secondary effects he subdivides into the following groups: (a) *useful effects*, pedagogically, such as that exercise of memory which takes place when we learn something; (b) *effects upon the receptivity* of the pupil, *i. e.* those influences which are able to further—as does

interest; or to hinder, as does fatigue—the primary effects; (c) *indifferent effects*, but those which must be taken into account, simply because they exist and are liable to absorb energy uselessly, *e. g.* unmethodical repetitions in memorizing.

The same absence of a pedagogical criteria we see also in most perplexed problems of intelligence in school children. Some claim that the child's intelligence is inherited (*nativism*), others believe that it is acquired (*empiricism*), and those who share the theory of *geneticism* say that the child is by nature neither good nor bad in its intelligence, it has only general unspecialized dispositions which may be developed in either direction. Meumann thinks that all these theories, having 75% in common, may be good for their own purpose, but a teacher and a school physician who are dealing with the normal pupil must judge the child's intelligence not only by its accomplishment of school tasks, but also by the psycho-physical energy expended in reaching this goal. Thus, three pupils may have the highest mark in solving a school problem, but one did it in five minutes, another in fifty minutes and the third in one hundred and fifty minutes. All three pupils had the same highest mark; which is the brightest? Meumann gives therefore, the following key to determine the child's school intelligence:

$$\text{School Intelligence} = \frac{\text{Work Done.}}{\text{Energy Expended.}}$$

Then, many a lad confidently pronounced by his teacher to be "dull" may eventually turn out to have quite the average share of brains. The life history of great men shows this. Under all these circumstances, in spite of the many previous inconclusive and negative verdicts, the problem of correspondence between the test of the laboratory and general intelligence of life cannot yet be regarded as definitely closed. No accurate measure of any intellectual ability has been established in spite of many persistent and painstaking researches. The only thing so far demonstrated is that the old means of investigation are entirely inadequate.

Many tests on school children and conclusions derived from it have been handicapped by too free use of criteria and methods of neighboring sciences of Experimental Pedagogy and School Hygiene, viz.: experimental psychology, statistics, physiology, anthropology, anatomy, criminology, biology, medicine.

Meumann and G. H. Hall have clearly shown that besides great analogy, there is also great difference between these sciences. In regard to pedagogical and psychological experiment Meumann says:

"The psychological experiment tries to reduce the investigated

processes of the mental life to the simplest case so that the complex of causes which enter into the investigated phenomena will present itself as simply as possible. The pedagogical experiment investigates throughout, the mental processes of the child in their complexity. Pedagogy must face questions with all the accompanying conditions."

* * * "In the pedagogical experiment, we hold individual results, all that we can discover about the individual differences of pupils, as of peremptory interest, while in the psychological investigation, the primary interest hinges about the determination of general phenomena of mental processes. If the psychological experiment is not concerned with exactly the psychology of individuality, the individual differences are frowned upon as unwelcome deviations from the main results."

Experimental Pedagogy and School Hygiene must have their own criteria and study all facts in a true pedagogical and scientific manner. Every good experimenter tries to eliminate in his experiments not only unnecessary forces (*i. e.* causes), but also possible effects which might take place and obscure the result of the experiments. Yet no one has thought of formulating a general law induced from such experience, viz, that a cause has many possible effects. This law is a direct violation of the common conception of statisticians that a cause has a single effect only. Many a statistician in Experimental Pedagogy and School Hygiene correlates all possible data from whatever source, neglecting the various influences which in different degrees, affect different subjects in the tests. The result of it is (1) they do not see that the number and the nature of the effects which actually take place may vary within *definite* limits only; (2) that it almost invariably happens with statistical inquiries that the earliest results reached are mainly confirmatory of the "rough averages" which are termed impressions, and only have the additional advantage of determining the "How Much"; (3) that it is rather from the subsidiary results that new generalizations emerge which were previously unsuspected and it is, therefore, rightly said that as the chemist finds his new compounds in the rubbish of the retort, so the statistical inquirer finds his new truths in the debris of experimental investigation.

We are just beginning to see clearly that a statistical conclusion is not a psychological interpretation, and that a psychological possibility does not mean, *eo ipso*, a pedagogical necessity. And just because the real experimental pedagogical method has been utilized so little numerous contradictions exist in the special branches of school, instruction and a great deal in method which is frequently accepted as verified and reliable represents but an hypothesis, of which it is not really certain, whether it be correct or erroneous, whether it be applicable to all or to only a specific type.

However all representatives of Experimental Pedagogy and School Hygiene aim to do scientific work, but all do not follow the same method. Some believe that the facts necessary for such scientific work may be collected by wholesale investigations, by means of questionnaires, by experiments carried on *en bloc*, or a whole class at a time. Others do not believe that these investigations lead to any positive generalizations, to any fixed pedagogical laws, unless there have first been collected a very large number of observations more directly upon children studied separately and as individuals. Up to the present time, this second group of investigators has contributed most of the successes of researches in Experimental Pedagogy and School Hygiene. And really, if teachers and school physicians, instead of trying to get meaningless averages, would study closely the psychological development in a few carefully observed cases, then the knowledge of the process of development would be increased. What we need is not so much what the average attainment is in any line, but rather how that attainment was reached, what stages of development were passed through.

4. Conclusion.

To conclude:

(1) The aims of Experimental Pedagogy and School Hygiene are very high indeed, and much needed in school education. They overlap in many vital points, such as fatigue, intelligence, physiological and anthropological tests.

(2) The present means of Experimental Pedagogy and School Hygiene to meet their many important problems are rather short on account of the lack of the real pedagogical criteria, methods and *modus operandi*.

(3) Experimental Pedagogy and School Hygiene mean an attempt to study objectively the facts involved in school and in general educational affairs but, of course, they do not expect to settle all school pedagogical problems at once; they attempt to supplement observation and experience of the past by the study of concrete pedagogical questions by best scientific methods.

(4) Experimental Pedagogy and School Hygiene have grown out of the synthesis of various sciences and now they are working for their autonomy. This emancipation as an independent science shows that Experimental Pedagogy and School Hygiene are not only possible but actual sciences, and that the practical teacher will be more and more compelled to attend to them.

(5) Autonomy of Experimental Pedagogy will be reached by the following means: (a) by establishment of purely pedagogical laboratories and chairs for experimental pedagogy; (b) by establishment of real pedagogical model schools in which all laboratory experimental results will be tested individually and collectively; (c) by coöperation of experimental educators, school physicians and practical teachers in all school investigations.

(6) Autonomy of School Hygiene will be realized (a) by making the school physician a member of the regular teaching staff, teaching personal hygiene to the pupils, school hygiene to the teachers and social hygiene to the parents; (b) by establishing school clinics, school hospitals, school kitchens, open-air school, school folk dances, school excursions, school medical examinations (these ought to be taken at least three times: just at the beginning of the school year, at the end of September, at the end of the first school term, and in the spring time), etc.

(7) It goes without saying that such means for realization of the autonomous life of Experimental Pedagogy and School Hygiene require as the first condition (a) a thorough general and professional preparation of both school physician (who shall not practice outside the school) and experimental educator; (b) financial independence and promotion by professional efficiency. Both Experimental Pedagogy and School Hygiene point out clearly that a modern school without a school physician would be the same as a school without a teacher. Perhaps some superficial observer will say that as yet Experimental Pedagogy and School Hygiene are rather hopeful than useful, but all the same, the future is on the side of these two earnest scientific pedagogical movements.

SOME PROBLEMS IN CHILD HYGIENE AND THEIR RELATION TO EDUCATION

BY

ARTHUR VERNER

That the problems of child hygiene are many, that their relation to education is intimate and vital, and that they are ignored and neglected is patent. Yet, in a meeting such as this one where every phase of every department of child hygiene is to be discussed authoritatively from every possible angle, one should hope to accomplish no more in a brief paper than to emphasize or direct attention to some of the more important problems and suggest their solution, emphasizing it may be, some phase that may have been overlooked by his co-laborers, or reënforsing what they may have said. Such then, is the modest purpose of this paper as growing out of the observation, the investigation, and the experiences of the superintendent of one of the smaller progressive cities in the middle west.

The common and everywhere present problems of child hygiene when considered physiologically, psychologically, and pedagogically are, I believe, here given in practically the same order as that adopted by all students of this subject. The enumeration is of necessity incomplete. Only what are considered the more important problems are indicated, the ones that medical men and educators may well center close attention upon.

First, how may we go about it to do something that will really increase the chances for children to be well born—healthy, physically and mentally sound?

Second, how are children to be protected in the early years of their infancy in a manner calculated to prevent any tendency that makes them especially liable to what are called school diseases a little later on, and by such means save a large proportion of the 30% that now never reach school age, thereby increasing the quality and quantity of the material of education?

Third, how are we to draw the plan of education for young children so as to provide for them upon their admission to school a training and development that will give them habits of bodily care that must constitute their chief defense against ill-health and disease the remainder of their lives? Or, to put this in another way, how are we to plan the work of the schools so this work must take cognizance of, and utilize

all obtainable knowledge of child life before school age is reached, and thus bring about a normal, vigorous, healthful development, that will insure a pedagogically successful school career and eliminate the necessity for so great an indulgence in corrective efforts and instruction? Briefly, how are we to break away from traditional curricula, processes of instruction, and subjects, and establish courses based upon educative values that will take care of the physical and mental well-being of children with the idea of increasing their usefulness and prolonging their lives better than is now being done?

Fourth, how are we to organize instruction and the material of instruction so that it may emphasize training more and more, to the end that what teachers designate as "listlessness," "indifference" and "don't care habit," may be reduced and children be given a greater desire to do their work? How are we to obtain a process of instruction that while it may not increase the net gain in knowledge will increase the training, thus laying a foundation for better brain activity later on?

Fifth, how are all the problems of home conditions and environment both before and after the child enters school—food, clothing, working conditions, parents' attitude and a multitude of others to be made to contribute something to better opportunities for children?

Sixth, probably the most difficult of all, the many problems of the hygiene and instruction of the adolescent period—the problems of health first, and then of the material, method and character of instruction best fitted to this period of life, recognizing in what Professor Burnham of Clark University has called "mental hygiene" the most serious problems. How at this period to plan instruction, for example, in the matter of vocational education so that a child's likes and dislikes will not be so large a factor in deciding his future educational career as his native capacities and tendencies?

Considering these problems in order, remembering, of course, that each is to be discussed purely in the relation it bears to education, I should say of the first—the matter of being well born—that this is probably the most important matter for any child. In order to make progress in this direction, we must, first of all, do what Sweden has done for 150 years, namely, keep proper vital statistics. Vital statistics are the book-keeping of health, and we cannot economize health any more successfully than we can money unless we keep books. This was first emphasized by Professor Irving Fisher of Yale. How important to a child that his birth, date of birth, parentage and all other necessary information for governmental, hygienic and educational purposes be made a matter of record. By such means the physical condition of his parents at the time of his birth may be known, his age could always be verified,

the laws pertaining to child labor could be efficiently enforced, blindness could be prevented by prompt medical attention to the new-born, proper medical attention could be given to the unfortunate in their early years, and valuable information could be given to school authorities upon their admission to school. Horses, cattle and even hogs are carefully pedigreed. Variations from the type are noted and recorded. Even matters of disposition are noted. And yet, after this nation has been in existence for 125 years, and after public health legislation has been agitated for 50 years and more, there are but eight states that have both birth and death registration—a condition which is not far from constituting a national disgrace. The registration of deaths has fared better than has the registration of births. While but eight states have systematic registrations of births (the New England States, Pennsylvania and Michigan) 22 states have adopted uniform registrations of deaths, making their data of value in public health. But even then of limited value only, for a registration of deaths without birth registration is like an accurate accounting of expenditures without consideration of income. We are powerless in an intelligent battle against preventable deaths when we do not know when or where these preventable deaths occur. We cannot conserve the lives of infants if we do not know when or where infants are born. This is not a doctor's problem. It is not merely a public health problem. It is a great social and economic problem vitally important to every class of people. Birth registrations are vitally essential in all questions of heredity and heredity has much to do in the education of children. A poor heredity is almost certain to leave marks of deformity and of irregularities of growth in one way or another. Suppose the record of the attending physician at the birth of Jacob Abrams showed these notes. Father, syphilitic. Mother, of low mentality and tubercular. Plainly whatever might be done in such a case, by either physicians or teachers, could be more intelligently undertaken than if these facts were not known, as is now the case. Suppose the record showed the parents to be cousins; this fact, though obtained late, has been of great value in every such case that has fallen under my observation.

Secondly, assuming that a child has been well born, it then becomes the duty of society to protect him in his early years, first in the conservation of his life, and second to make him as nearly immune to school diseases as it is possible to do. In the words of the superintendent of associated charities of my own city, Miss Mamie Dowrie, the first of these can be accomplished "by wise and intelligent use of the millions of money from public and private sources that are dedicated to the protection of infants, to the welfare of the young, and the development of the race, and by hard and systematic work." These tiny ones are

best kept alive and in health by teaching mothers how to clothe, bathe, feed and house them. This is oftentimes a difficult problem, but it can be done. In impossible cases appeal is had to the court to declare the children dependent and take them from the parents until such parents show they can and will make proper efforts to care for their children in a hygienic manner, and in case they do not, take the children permanently. Wholesome dietary and hygienic care will for the most part counteract nutritional disturbances and anæmias in children. Hypertrophied or diseased tissue—a veritable intake of contagion—may be removed, especially hypertrophied adenoidic tissue. This, together with diseased tonsils, induce nervousness, petulance, bad humor, and check intellectual enthusiasm. Nervous disorders, always slow to yield to treatment, should be recognized here and treatment prescribed, but all of this is as yet far off, because we haven't the parents who have had a training that will enable them to see and understand.

Our third problem has to do with the child as he enters school. If he has been well born and well cared for until he reaches school age, it then becomes the duty of the school to take him as the raw material of education and plan its work so that the child will begin at once the formation of habits of bodily care that will render him secure from school diseases. He must be developed normally, healthfully. The schools must become more than they have hitherto been agencies for the preservation of child life and child health. Progress in this direction may be made by requiring from each child upon his entering school a reputable physician's certificate of his physical condition. Certainly the school authorities must see more plainly than hitherto the essentials of education and see to it that the work of the schools function more in the training in these essentials than in the acquirement of much of the knowledge that they now emphasize at the expense or neglect, rather, of physical health. All that has been said concerning birth and health previous to entering school is of vast importance here. While every state has laws specifying the minimum age at which children shall enter school, based upon the general and accepted doctrine that children must have some degree of mental and physical development before they are capable of instruction, yet the only means of ascertaining the real age of a child in the absence of birth registration is the statement of parents. As there is a constantly increasing employment of women, thousands of merest infants are placed in school on false statements of age. Harm is done these small children of course—physical and mental harm—and the states are spending millions unnecessarily in trying to educate those who are too young to learn. Some enforcement of compulsory school laws is impossible until we have a way to establish age. It is among these under-aged children that the mor-

tality is highest and the contraction of school diseases easiest, for they are yet in the years when their powers to resist disease are slight. The most that can be done here is to utilize all obtainable information about the child up to the time he enters school, to impart the academic work of the school in a manner to train rather than inform, and to see to it that the elaborate systems of ventilation really ventilate, that the use of the common pencil, the exchange of chewing gum, the trading of bites of apples, etc., really be attended to by preventing them. Such things must be made as nearly impossible as may be. This means a closer, more intelligent supervision, a different program of work and rest, but these are things the schools need.

If these things be considered and attended to, when the child reaches the higher grades he will, because of his acquired habit of doing, because of this greater attention to his general well being, have a greater desire to do his school work. In other words, the attitude of listlessness and indifference toward work in the years preceding and during adolescence can be corrected only by the right sort of work before these years are reached. By this time I mean that physical defects will have been noted and corrective measures applied. All possible knowledge obtainable of the child's life will have been made use of in his training thus far and he will be trained to do something. This very power—the power to do—will make him want to do even more and we will have realized what is so much desired—the best possible physical condition upon which to base a right school attitude and the trouble over school attendance will be removed.

The home environment must be made a feature of every problem affecting a child's welfare. To know his home is a long step toward an intelligent handling of any child. Not only the character of the home should be known but the health conditions of the neighborhood as well. The character of association outside of home and school should have attention, for example, the hygienic condition of homes frequented.

Lastly, the hygienic problems of the adolescent and their relation to the education of this age are a kind peculiar to themselves. The one the writer has encountered oftenest is the one of keeping them in school—of combating the lack of a desire to do hard school work. There is a class of problems the solution of which and the relation to education of which hygiene and the investigations in the field of child hygiene give us only a little help. In my opinion, modern school methods are most likely to do injury to the health of the adolescent and thus defeat the very purpose they seek to accomplish. It seems to me this field is top heavy with discussion, but exceedingly light in definite information. I verily believe that constant employment in a wholesome atmosphere whether at work or play, a high regard for the self-consciousness peculiar

to this age, a careful attention to the clothing, allowing abundant room for growth and ease in every movement, and a world of watchfulness, patience and sympathy are the things of most worth to the adolescent.

In conclusion, the point in this paper deemed most worthy of serious attention is that of birth and death registration. We need to know so very much more about how children are born and how they grow before they reach school. It is inconceivable how anything could be of more value than this. Most of the other problems are in no sense new, and each community must solve them for itself. But this matter is universal. If a child could present a complete history of himself when he enters school how much more intelligently might his instruction be begun. Without this we must continue to make egregious blunders and continue to follow blind alleys.

PUPIL COÖPERATION INDISPENSABLE IN ENFORCING HYGIENIC REGULATIONS

BY

I. EDWIN GOLDWASSER

In a certain sense, the subject of this paper is rather misleading. For nothing is so completely opposed to the principles underlying pupil coöperation in school government as is the idea of enforcing regulations of any kind through the exercise of an authority outside the child. It is fair, however, to assume that those who are deeply concerned with the physical welfare of children see safety assured only in complete obedience to definite hygienic regulations. To be of value, these regulations must be implicitly obeyed. It is the purpose of this paper to show that such obedience can be secured, not by enforcement in the ordinary way, but through pupil coöperation alone.

Unless it is understood at the outset that the term "pupil coöperation" is here used in a more or less technical sense, our discussion can have but slight value. One phase of School Hygiene deals entirely with the acts of pupils with reference to themselves and their surroundings; if the children do not coöperate, there can be no carrying out of these regulations. No school measures the efficiency of its work solely by the excellence of the rules issued for its proper government. Control begins when rules are translated into acts. Not what a principal orders, but what the children do, is the test of the value of government in a school. But this every-day notion of coöperation is not enough to meet the needs of the situation. If our aim were only to achieve certain results within the limits of the school, we might perhaps content ourselves with this idea, and, by realizing our theories in the acts of the pupils, consider the goal attained. The true aim of school government, however, is, or should be, of course to secure certain results for the school, but what is more important, to establish certain habits for life. And this larger aim cannot be realized unless we appreciate the true meaning of pupil coöperation.

Before we proceed further with this discussion, therefore, it is necessary that we understand what is meant technically by the term "pupil coöperation." As a constructive principle of school government, which looks not for administrative economy but rather for character building, it means enlisting the activities of the pupils on the side of the management of the school, provided the rules for such management are formu-

lated by the pupils through assemblies of their own choosing and in response to needs that are real and vital.

Obedience to laws imposed by some external authority may result in the grudging service of a Caliban but can never produce a power of self-direction. The most potent laws in our own lives are those which we have framed on the basis of our own evaluations. A pupil who has helped to frame the law by which he is governed has grown into an understanding of its relation to his own life. He looks upon the law not as a restraint upon his liberty but rather as a mode of direction of his activity. He has come perhaps to feel how necessary that law and its enforcement may be for the attainment of an ideal with which he is wholly in accord.

If we are looking for school results only, coöperation of this sort is not needed. But whether it be in the selection of a unit of subject in a curriculum, or in the adoption of a method of teaching, or in the building of a habit, if we consider merely the school value, we are missing the real aim of education. School values are important, of course. But primarily we must consider the social value of the elements in the educative process. Society is the individual writ large. As we train the child, we must keep before us the true aim, the development of an efficient citizen.

In these days when so many arguments are advanced to combat the dogma of formal discipline, it is dangerous to advocate as one's educational aim a preparation for some future activity. In this connection another factor of the highest importance must be taken into account. In all training where a degree of power gained in one field is to be transferred to another, care must be taken that the field of present training resemble as closely as possible the field of future application. Unless this condition is met, instruction in school hygiene can never be completely successful. In life, the child will be thrown largely upon his own responsibility. His acts will be performed in response to laws which he will to a great extent frame for himself. Situations will confront him to which he must speedily adjust himself. There will be no helping hand to remove temptation from his path, no kindly voice to whisper valued counsel.

School government of the ordinary sort offers no preparation for such an environment. The teacher is too much with the child. Her very zeal defeats her purposes. In her anxiety to regulate the physical life of the child, realizing how far-reaching may be the ill effects of neglect, she issues her orders and devotes her energy to assuring herself of their enforcement. The results are excellent within the limits of school life, but no provision for the intelligent independent action of the adult has been made. While attending to the needs of the present,

the teacher must have her eyes open to the future. It is only when pupils coöperate in the formulation of the laws regulating their life that a power is developed which will enable them later to make independent progress.

It is important that the child form habits of personal cleanliness, that he be taught how to make his surroundings hygienic, that he learn how to regulate his diet, and so on. But it is a great mistake to emphasize the product so strongly as to lose sight of the process through which these habits are formed. At the beginning, specific injunctions and models for immediate and direct imitation must be used to establish standards by which the children may later measure their own acts. Later the child must be made to understand why it is important that these things should be done as he has been trained to do them. Here is the place for definite instruction in hygiene. He must rationalize the habits he has formed. He must recognize their relation to his present well-being, but he must also see their value as contributing to his general efficiency, personal, civic and social.

This, however, is not enough. It still keeps instruction external to the child. No great movement for reform can become potent in the life of a people unless it is interwoven into the thinking processes of every individual. What is anybody's business is apt to become nobody's business. It is only when you and I make it personally *our* business that anything worth while is accomplished. Similarly, no instruction in hygiene will reach its highest efficiency unless it is made the business of every child to see that the rules are obeyed by himself and by his fellows, and unless the instruction goes beyond the formation of habits for the present into the formulation of ideals for the future.

How this was worked out in practice, may be shown by describing some of the activities in one of the large schools in New York, Public School 20, Manhattan. In the management of the school, pupil coöperation has done much to solve the problem of how to form character through participation in the regulation of the activities of the school. By organizing a school into a state or a city and placing it under the control of a boy-governor, elected by the pupils, discipline is secured by having pupils attend to the enforcing of laws framed by a legislature of their own choosing. In this way, we have developed a sense of personal responsibility in school affairs, extending to the pupils as individuals and as a collective body, and a power of self-government which reaches far beyond the life of the school.

Among the departments of this government is a Department of Health, the Commissioner elected by the student body, his assistants and officers being either elected or appointed. This department has charge of all matters relating to the physical welfare of the children.

Officers in each class attend to the daily inspection of the pupils, examining hands, nails, books, etc., keeping record of those who do not come up to the standard, and, when necessary, administering punishments of various kinds. Curves are plotted in each class to show the progress of the class day by day. The standards, or as we may call them, specifications for satisfactory cleanliness are established by the pupils, and the punishments are meted out after due trial before a court composed of judges elected by the children of the school. It is interesting to note that there has been a smaller percentage of absence due to contagious disease than in any other schools of the same size in the immediate neighborhood.

Another division of this Sanitary Squad takes charge of the building itself, reporting to the janitor conditions calling for closer supervision of the cleaning work. A vigorous campaign is instituted against spitting in or about the school. Pupils especially chosen go from class to class and explain to the children of the lower grades the dangers of the practice, asking for coöperation in the enforcement of the rule. Reports made of violations become a matter of public duty and are freed from all suspicion of tale-bearing. It is not an instance of one individual reporting another. Rather is it the law being applied to a specific offense. The situation is completely de-personalized.

The details of administration of the Dental Clinic are handed over to a committee of the pupils whose presence does more to quiet the fears of the patient than all the soothing words of the dentist in charge. So also the shower baths, while under the control of a bath master, are supervised by an officer for each class. As a result, week in and week out during the year, over 1,400 children have a shower bath each week in this one school, situated in one of the most congested sections of the city.

Other divisions of the Department of Health within the school coöperate with the Tenement Department of the city, the Fire Department and the Street Cleaning Department. For the last named a separate Civic League has been organized the members of which report directly to the Section Foreman of the City Department to secure an abatement of abuses in the neighborhood of the school. Squads are assigned to certain streets and the work of each squad is checked up by inspectors appointed by the School Health Commissioner.

An interesting instance of the earnestness and effectiveness of this kind of work was afforded recently in connection with a talk given by the principal on the subject of mid-day luncheons. Hundreds of children are compelled to eat their luncheon at the school owing to the fact that both parents are away at their work during the day. Push-carts are lined up at the noon hour and many pupils make a meal of a

pickle, an ear of corn and an ice cream cone. Other combinations, equally nutritious and wholesome have been noted.

After a talk on food values the entire matter was handed over, by the principal to the Health Department of the school. A three weeks' campaign ensued, as a result of which, after many difficulties, some of which had to be straightened out by the policeman on duty, the boys succeeded in compelling the push-cart dispensers of food to keep their wares protected from the dirt of the street, to cover their wagons with clean oilcloth, to wear white aprons, to show bills attesting to the recent date of purchase of their wares and to the quality, and to wash their hands directly before serving the food!

Nor was this all. As part of the campaign, a boycott was declared against all push-cart peddlers who did not comply with the demands of the Commissioner. This was decided upon at a meeting of the pupils of the school. Several months later, a candidate for the office of Borough President was defeated, an issue having been made of the fact that he had eaten pickles for luncheon and then drunk soda-water (that combination having been blacklisted by the Commissioner) and it having been shown that he had violated the boycott and purchased a luncheon from one of the offending peddlers.

What the permanent results of such a system of enforcing hygienic regulations will be, it is of course impossible to prophesy. Certain things, however, are assured. Pupils obey the laws rationally. They discuss intelligently the reasons for the enactment of the rules. They are vitally interested in seeing that every other pupil obeys. And best of all, they are trained to meet a situation for themselves, and are thus prepared to meet larger situations for the furtherance of the best interests of the community.

GOOD VISION AS A FACTOR IN SCHOOL PROGRESS

BY

S. D. RISLEY

The signal importance of good and comfortable vision as a factor in the educational progress of a child is not always appreciated by either parent or teacher. Until within comparatively recent years the child, having reached the conventionally accepted school age was entered at school without inquiry as to the fitness of the eyes to withstand the exacting and steadily increasing demands of the educational process. Formerly this neglect was due to ignorance of any need for such inquiry. Children are not prone to complain of their discomforts.

If the strain at near work in the school-room resulted in a periodically blurred page, smarting and burning eyes or pain in the eyes or head, how was the child to know that this was not the common experience of his fellows? Therefore why should he complain? This had always been his experience in the school-room and was therefore accepted as a part of the enforced confinement and other disagreeable features of his school life. Any assigned task which can be performed only at the expense of physical discomfort or actual pain is either neglected or imperfectly executed. In the school-room this means illy-prepared lessons and bad marks. In a word his school progress is hampered. He suffers, in addition to the pain produced by his work the mortification of falling behind his class, loses courage and is unhappy. The baneful influence of such an experience over the development of character in the growing boy or girl is obvious.

Very early in my professional experience I had thrust upon my attention two striking illustrations of the importance of good vision over the life of the individual. A healthy and bright boy, aged 14 years, my ward, was a member of my own household. While a leader in the sports affected by boys of his age, he was at the foot of his classes and made poor progress at school. At home it was necessary to drive him to the preparation of his lessons for the following day. On one such occasion he asked me why studying his lessons gave him the headache and caused his eyes to water? Examination revealed the fact that his vision was less than one-half of the normal acuity and that he had a high degree of mixed astigmatism. His eyes, even at fourteen years of age were already developing myopic refraction through the turn-stile of astigmatism; the readily yielding sclerotic was stretching under the strain of work. The error of refraction was corrected by glasses.

His lessons at once became a pleasure to him. He rapidly took the head of his classes in place of the foot and to-day is an active and successful business man of New York City. His myopia has never increased.

At about the same time a clergyman, my personal friend, consulted me, bringing his young daughter Aet. 12 years. He was plainly distressed in mind and without a word presented a note from the child's teacher in which he was advised to secure a governess for his child as she had not mental capacity to pursue her studies with other children. I suggested a possible defect of vision and found a very high error of refraction. She was unable to decipher the largest type in her school books. The error was corrected by suitable glasses with which she found no difficulty in keeping up with her class. These and more or less similar experiences in practice led up to my studies of the children's eyes in the Public Schools of Philadelphia.

Through the influence of the Philadelphia County Medical Society permission was secured from the Board of Public Education to examine the eyes of the children in the various grades, from the lowest to the highest, in the Public Schools of the city. This was undertaken with the aid of five trained assistants at the opening of the schools in September, 1878, and pursued throughout the school terms until the summer of 1880. The privilege was then withdrawn by the Board of Public Education because of frequent letters from parents and in some instances written by their family physicians, objecting to the examination of their children's eyes.

Fortunately a sufficient number of accurate records had been secured to afford the construction of trustworthy statistical tables, setting forth the static refraction and existing condition of the eyes in the various grades of school life from the average age of $8\frac{1}{2}$ to $17\frac{1}{2}$ years. The results of the examinations for each individual were recorded on a separate blank sheet which called for the age, general health, external condition of the eyes, comfortable at work or not, headache, etc., with the acuity of vision and range of accommodation for each eye; the presence of astigmatism as shown by astigmatic chart and the binocular muscular balance. With this paper in hand the child entered a shaded room for the ophthalmoscopic examination where the refraction was estimated and the condition of the fundus carefully noted.

A year was spent in the study and careful tabulation of these records. The results reached, the lessons taught by the investigation and the formulated conclusions and recommendations growing out of them were presented to the County Medical Society in April, 1881. The more carefully the original individual records and their massed results were studied, the more obvious it became that there was a very definite relation of cause and effect between the existing congenital defects of

refraction and the presence of weak, painful and diseased eyes and a considerable group of general nervous disorders. While these pathological conditions were aggravated in school-rooms where the hygienic environment was unusually faulty, it was plainly obvious that the defective eyes suffered greater disturbance than the emmetropic and that headache, general irritability and restlessness were practically confined to the children with some congenital abnormality of vision, especially where astigmatism was present. In a word the percentage curves graphically displaying the results of the investigation, for pain, lowered sharpness of vision and disease, beginning at a minimum for emmetropic or model eyes the percentage steadily and rapidly ascended in defective eyes reaching a climax in eyes with myopic astigmatism. Furthermore the percentage curves based upon states of refraction at different ages, which also stood for school progress, revealed the striking fact that while the emmetropic standard or model eye remained in nearly uniform percentage throughout school life from $8\frac{1}{2}$ to $17\frac{1}{2}$ years of age, the hypermetropic eyes diminished and the myopic advanced in a corresponding ratio. The near sight increasing from 4.27% at $8\frac{1}{2}$ years to 19.33% at $17\frac{1}{2}$, while emmetropia remained in uniform percentage throughout school life.

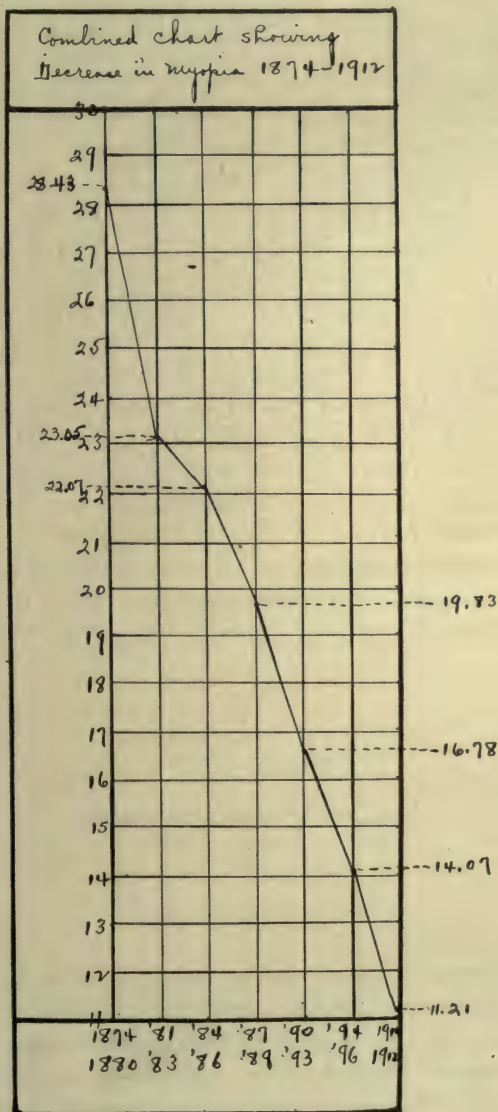
The full significance of these figures is plain when it is understood that the acquisition of myopia or near-sight is only through pathological states of the *fundus oculi*. The aphorism that *the near-sighted eye is a pathological eye* should always be borne in mind.

A most significant fact set forth in the investigation and bearing directly upon the subject under discussion is the rarity of the model eye. There were only 9.64% of emmetropic eyes in the records while 90.36% were more or less defective and upward of 60% of these abnormal eyes were sufficiently defective to suffer from lowered sharpness of vision, weak and painful eyes or from some phase of the symptom complex characterized as *asthenopia*.

It is because of this important detail that I have ventured to place upon the annals of this Congress a statement regarding the "Importance of Good Vision as a Factor in School Progress." If your boy or mine has been so unfortunate as to have been born with a hypermetropic astigmatism or with some associated abnormality of binocular balance in sufficient degree to fall within the 60% already noted, he will suffer from eye-strain; he will be asthenopic, that is to say, a sufferer from weak eyes; it may be headache, general irritability or a large group of reflex phenomena which disturb, modify and retard not only school progress but, remaining uncorrected throughout the formative years of the boy's growth and character building, will shed a cloud over your

own hopes for his successful career in any vocation requiring the employment of the eyes for accurate work at the reading distance.

If he is plucky and works on in spite of discomfort or pain, or, if he has a thin or readily yielding sclerotic coat, the eyeballs distend under the increased intraocular tension caused by a congested uveal tract produced by undue eye-strain, the inevitable result of his abnormal refraction—the sclera stretches; the eyes become myopic. In the



school examinations these eyes increased from 4.27% at 8½ years of age to 19.33% at 17½. In Cohn's statistics the percentage in the German Universities had risen to 60% from 5% in the primary schools.

Among the many possible conclusions which might have been constructed from the investigation one stands forth with unmistakable urgency, viz: That no child should be permitted to enter upon the exacting visual requirements of the educational process until by a suitable examination the eyes are shown to be fitted for the struggle with books. If such examination reveals significant errors of refraction or of binocular balance, the abnormalities should be corrected. If this advice is neglected the utmost care in securing the best hygienic environments in the school-room or at home will not prevent injury to these defective eyes or a retarded school progress.

To-day this seems trite, but when this conclusion was published in April, 1881, it was new and was confronted by not a little sarcastic comment and opposition. The importance, however, of correcting errors of refraction by suitable glasses was rapidly recognized and was uniformly adopted and practiced by thoughtful practitioners; not only in school children but at all ages in the community at large for individuals who were victims of weak eyes, headaches, etc., etc. The truth set forth in the conclusions of the school investigation has been abundantly demonstrated in a rapid decline in the percentage of myopic eyes. For example: from 1874 to 1880 28.43% of all cases applying in my office for the correction of visual defects were myopic. In 1890-1893 this had fallen to 16.98% and in 1912 to 11%. In addition to this the degree of the myopia found was uniformly lower, the high degrees, 10 D. or more, with their choroidal disease, macular atrophies and retinal detachment having become comparatively rare.

DISCUSSION OF

SAMUEL D. RISLEY'S PAPER

BY

F. PARK LEWIS, M.D.

The essence of Dr. Risley's paper would seem to be that imperfect seeing connotes difficult thinking, and effort in seeing causes impeded or slow thinking. It would seem to be almost axiomatic that in order to obtain the highest efficiency from the human machine it must be in perfect order. If the imperfection in it involves the sense organ, which

is constantly and directly in relationship with the brain, then the more direct and immediate must be the interference with intellectual effort. That eye strain in any of its forms prevents rapid and easy mental action can be easily demonstrated. Take, if you please, a sheet of plain clear glass, rub the hand over it until it become soiled then place it between the eyes and a page of printed matter which requires some effort to be clearly understood, and it will be found impossible to follow the thought with any degree of readiness. Take another illustration. Take a sheet of glass in which there are many imperfections, the surfaces of which are not clear and which distorts an object seen through it. Try and read a page through this and it will be found impossible to do so with any degree of speed or intelligence. These two conditions represent in the first instance imperfect sight, and in the second difficult sight and both carry with them eye strain. I asked a young lady who had a very clear and logical mind to read a page of philosophy with her usual glasses, upon which she was very dependent. She did it without difficulty and followed the thought easily. I said, "Now take off your glasses and read the next page," and she found it almost impossible to do so understandingly. So children in our schools whose eyes are imperfect and who cannot see easily or clearly are so hampered that they are retarded in their studies, made nervous and impatient through the effort which they are obliged to make, and fail where they would succeed had this condition been corrected.

WHY GIVE SEX INSTRUCTION IN HIGH SCHOOLS?

BY

RANDALL D. WARDEN

I have been making a study of sex hygiene literature with a view to asking the Newark Board of Education to introduce a course of study on this subject into the High Schools at least. I have planned the instruction as a part of the work in the gymnasium. I believe the gymnastic teachers of the county should undertake to teach sex purity as it is so closely related to hygienic and physical efficiency. There is no other body of teachers who have the opportunity to come into such close relationship with all the pupils of a school as the physical directors. They are looked up to by the student body. Their very title gives them an official right to present the subject of sex hygiene.

My conviction is that the Church should have long ago undertaken the responsibility of instructing its followers in the meaning, the purpose and the sacredness of the sex function, instructing boys and girls through a carefully prepared course previous to and necessary for admission to Church membership. That there should be a double standard of sex morality I hold to be because of an unfortunate neglect of such instruction and of religious responsibility. And, what is more certain, this double standard will continue until that time when education shall have enlightened women, concerning their mistaken trust in man. Evil men have good cause to look askance at women suffrage because one of its results will be woman's education in these matters.

Religion has been the properly conceived means of the regeneration of man, but the ministers of the Church have not been equal to the task of instructing their flocks, nor have they been successful in moulding public opinion to the necessity of women's acquiring knowledge concerning the facts of life and reproduction. When mothers, well meaning and affectionate, expose their daughters in clinging skirts, low necked waists, bare arms, and at least one leg revealed, they make their daughters voluptuous enchantresses. When they allow these same daughters to walk on the street and to attend public school, sit among and be companions of normal and full-sexed boys, it is high time the church or some institution taught these mothers something about their sons' temptations and their daughters' possible downfall.

The people now are calling upon the institutions of education to help out the home and the church, and the most vital question before educators to-day is, "How shall sex instruction be given?"

On this question a committee on "Matters and Methods of Sex Education," comprising the eminent specialists, Maurice A. Bigelow, Thomas M. Balliet, and Prince A. Morrow, reported before the Fifteenth International Congress on Hygiene and Demography, held in Washington, D. C., in 1912. Their report can be obtained from the American Federation for Sex Hygiene, Tilden Building, New York City. From questionnaires sent out by this committee to ministers, educators, physicians and professional men, the weight of opinion on various questions was as follows:

That ignorance of sexual matters make special instruction necessary to young people. Affirmative, 91; negative, 0; doubtful, 5.

That the failure of parents to instruct in sex matters makes it a necessary burden resting upon educational institutions. Affirmative, 73; negative, 7; doubtful, 11.

That sex instruction should be incorporated into courses of hygiene, biology, and ethics in elementary, high, and college courses. Affirmative, 80; negative, 3; doubtful, 3.

That specific instruction in sex matters should be given in the early years of high school. Affirmative, 75; negative, 1; doubtful, 2.

That since many public school children never reach high school, there is a need of sex instruction in the primary schools. Affirmative, 73; negative, 6; doubtful, 9.

That specific instruction should be given by selected and trained teachers. Affirmative, 87; negative, 0; doubtful, 6.

For all questions, then, pertaining to sex instruction, we have a total of 479 in favor of this instruction. Against it we have a total of 17, and doubtful or timid of overthrowing precedent, 36.

We shall not overstate the inevitable consequences of lack of personal purity and loose sex relationship if we assert that no nation can long endure which allows its practice. We have historical proof that the greatest civilizations of the ages sacrificed their strength and resources in sexual debauch.

So many of these cases arise in history that we may well question the possibility of any nation's ultimate escape. The gravity of the situation existing among our people and in all grades of our society, any thoughtful man must realize. Indeed, it might be stated that only by solving the problem of teaching the people personal purity may this, or any other country, escape the destiny of decay.

Most of the writers on moral prophylaxis state convincingly that sex hygiene should be taught at least in the higher schools of education and in the colleges, and the questions before you are: How shall it be taught? When shall it be taught? Who shall teach it?

Before answering these questions, it is perhaps necessary for the pur-

pose of convincing Boards of Education and the public of the necessity of beginning sex instruction in our schools, to cite some of the arguments advanced by the foremost writers on the question. What follows has been taken and arranged from the writings of the State Boards of Health, Stanley Hall, John Elliott, Prince A. Morrow, Howard A. Kelley, E. L. Keyes, Robert W. Willson, and the many contributors to the transactions of the American Society of Sanitary and Moral Prophylaxis.

That sex is of the most profound interest to youth is unquestionable. There are three topics that a young man is especially interested in:

First, sport and friendship. Second, woman, especially as she relates to society and sexual questions, and third, the job he shall fill during his life. At an early age his sexual passion becomes a burning flame. Thereafter it dominates a certain portion of his years in a manner well-nigh uncontrollable. It is a seething volcano, without metes or bounds, and the lava of imagination inside causes this volcano ever to spring into active eruption.

If the subject is too "delicate" for you to discuss in your home life, if your "moral" susceptibilities will not permit you to establish such a confidential relation with your son, why not dispose of the matter in a sensible way and turn the problem over to the school educators? They stand ready and willing to give such instruction as soon as *you* say the word. Since a young man must learn of his sex nature *some time*, which is the better for him, the wholesome and noble truths of science and morality, or misleading, degrading street or "curbstone" information that to-day often constitutes his sole knowledge and which leads a large number of our boys into contaminations which are the result of sheer "curiosity."

If knowledge can be given to the youth at this time, good must surely come of it. From the standpoint of science there can be no greater satire upon creative wisdom than the idea that a knowledge of the organs that transmit life is shameful, or that the education which would lead young men to live according to the physiologic laws of health is profane.

What ridiculous prudery for the public to look upon education in sexual hygiene as not proper for the young! Why should traditional prejudice surround sexual matters with an atmosphere of shame? Stanley Hall says that at the age of adolescence there is a supreme opening for the highest pedagogy to do its best and most transforming work in the education of the youth on all matters pertaining to life.

It has been the fond delusion of the human mind that in legislation relief might be found for those sins which have their roots in the nature and passions of men and women. There could be no greater fallacy. True and lasting reforms must spring from the hearts of the people,

and the spectacle of the people trying to purge moral obliquity from their midst by man-made laws is a joke.

There is left, then, the recourse of education. Since education was first conceived, the lack of sex training has been one of the most glaring defects in preparing the young pupil for the duties of life. Is it not strange that while education endeavors to fit both sexes for society and citizenship, yet no care whatever is taken to fit them for still more important positions they will have to fill—the position of parents?

Without knowledge as to the seriousness and universality of prostitutional disease, thousands of young men fall into the venereal trap practically without warning, and thus become infected with poisons which may cause them and their children lifelong anguish. Ignorance is always a curse, and knowledge a blessing.

At adolescence life reaches its maximum intensity and performs its supreme function. Sexual life is normally a magnificent symphony the rich and varied orchestration of which brings the individual into the closest "rapport" with larger life, and without which life would be a mere film or shadow. As this vast subject looms up to the psychologist and he begins to catch glimpses of its long neglected wealth and beauty overgrown with foul and noxious fungoids and haunted by all evil spirits that curse human life; as he clearly sees to what a degree art, science, religion, the home, the school and civilization itself suffer from this degradation; as he understands the great importance of normality in primary acts and organs, he realizes that it is his preëminent prerogative and duty, from which it would be base cowardice to shrink, to sound a cry of warning in terms plain enough if possible to shock both quacks and prudes, who have, the one perverted, and the other obscured, the plain path of life adolescence.

Whenever a suggestion is made to educate boys and young men as to the truths of the sexual life someone generally appears quickly with the old fashioned argument that there might "be some boy" in ignorance of the meaning of sex nature "whose curiosity might be aroused and who might be led into bad things" by such moral and scientific instruction. Those who advocate such education are not giving much thought to this sort of a saintly youth who exists largely as a figment of the imagination. Advocates of sex instruction have their eyes fixed firmly on the ninety and nine shrewd, sharp boys, who are most curious and eager to learn the facts.

The sex function is intimately associated with the physical, mental and moral growth, it profoundly modifies the intelligence, habits and character. It is practically certain that this function will be exercised normally or abnormally, legitimately, or illegitimately by nine out of ten of the rising generation and with results often harmful. Experience

shows that thousands suffer physical and moral wreckage from trusting to blind instinct for the sole and sufficient guide of its regulation. How often we hear that miserable, despairing cry, "I didn't know."

It would seem to be the aim of most parents to launch their children into the world in a state of Edenic innocence. There is nothing more fatuous than their illusion that they succeed.

However, the teaching of sex purity is a delicate subject. The innate modesty of the young soul makes all the mysteries of life so sacredly secret that he cannot muster courage to reveal his doubts or his desires to even those nearest to him.

Highly sensitized in every fibre, he fears censure or rebuke, and the very thought of this from those nearest and dearest to him is greater than he can bear. Sometimes boys try to lead up to these topics indirectly, or tell their own troubles in a third person, or elaborately make openings for conversation on the subject, only to find that grown people feel positive reluctance to talk of it (Story: Men Fear Both Hypocrisy and Confession.)

Enlightenment should come as a natural part of education, just as we learn of the deglutition and alimentation of food.

In order to show the misunderstanding arising from young men's ignorance of nature's ways, here are a few specific cases taken from Stanley Hall's book on "Adolescence." They show what tremendous disaster may result when youthful imagination is allowed full play.

A certain physician states that he annually sees one hundred cases of young men who deem their condition hopeless. One typical youth decided that he would not go to college, was ruined and must soon inevitably become insane. Another bought a revolver and planned, after a farewell visit to his mother, to shoot himself in despair. Another selected a spot at the river where he would drown himself, which he prepared to do, but almost by accident met a physician who persuaded him he was all right, and he went to work with renewed courage. Another young man selected a cord which he carried in his pocket for a long time, trying to muster courage to hang himself, because he could only disgrace his friends and parents. Another gave up a promising career and shipped on a long voyage hoping to find in this a cure. Another turned on the gas at night, but was discovered and saved in time.

A young convert felt that he was losing his mind from nocturnal experiences, but, in exceptional and excessive religious activity, hoped that in the short time left before he became an utter wreck, he might do so much good and cling so close to God that it would be possible for him to be saved after his mind was gone. Another struggled for three years in the state above described before he could muster courage to write to the doctor, meanwhile had abandoned his purpose of enter-

ing the ministry because he felt unfit, and finally staked the question of suicide on the results of the examination and conference that followed, and was found perfectly normal.

Another, who had sought religion as a refuge, found that prayer and service for others could not help him so he dropped out, and gave up hope of ever having a home or family of his own, thought he had lost virility and at last, after long brooding, visited a vile house to make the one experimental test of his life. A freshman, balked in his aspirations for purity, threw away his hopes of a career and resolved on a short life and a merry one, and having means, became the wreck he at first only fancied himself to be.

This brooding over fancied or real irregularities affect profoundly the whole tone of mind and body. Ignorant of the wide range of normal variations in the male, boys observe themselves sometimes very consciously and methodically even with mirrors, worry over every peculiarity of size, direction, shape, unequal pendency of testes, laxity of the scrotum, position of the prepuce, crook or twist, shade and color, and become anxious urinoscopists, and the first spontaneous discharge produces psychic perturbations that are entirely unnatural and unwise. Is it strange that melancholy, unhappy, low spirited, boys grow up in the world?

Again the youth is profoundly influenced by circulars from quack concerns, telling him that if he is irritable, discouraged, fears his manhood is lost, has had bad dreams, unreliable memory, pimples, blotches, is easily fatigued, is bashful in the presence of the other sex, has lascivious thought, symptoms some of which are inseparable from this time of life, his intellectual fabric is in jeopardy. Does not all this seem to show that it is positively criminal to delay longer or deny knowledge the absence of which makes of their lives a torment of hell to these young boys?

Let us take one step further into the realm of reality to convince the laymen of the necessity of instructing young boys just entering manhood on sexual matters. Few young men know of the tremendous dangers they are encountering in gratifying their sexual desires by unlawful intercourse with women.

A few statistics may serve as an illustration not only of the prevalence of temptation on the streets of a great city but of the ubiquity of gonorrhœal disease in its many forms. It has been well characterized as the most widespread of all contagious diseases, with the single exception of measles. It has been shown that in some cities of Europe more than one-half of the entire population and more than three-quarters of the male population suffer from gonorrhœal infection. Dr. Allen reports from one hospital dispensary in New York City 86,000 cases

of all kinds treated in 1900, of which over 3,000 were instances of venereal disease. In 1903 we learn from a commission appointed to study the subject that there were in New York City at that time about 200,000 syphilitic subjects, and probably four times as many (800,000) cases of gonorrhœa. This ratio holds good for nearly all the large cities of America. Do you know all prostitutes are considered gonorrhœal subjects, and it is estimated that every fourth one is qualified to transmit syphilis? From one city out of 1,115 cases of gonorrhœa reported, 382 cases were of patients who were boys under 21 years of age.

The Surgeon-General of the Navy reports that one out of every five men has some venereal disease, and what is more astounding, that the percentage is growing from year to year. These percentages are low because they only include cases reported on the larger ships, having medical officers attached to them, and by the land stations. Then, too, not all cases are by any means reported even in these stations, because the men conceal their condition where possible. Lieutenant Logan Cresop of the Navy who has recently investigated conditions states that most of the officers of the Navy are convinced that 25% of the cases are never recorded or observed. He thinks that a conservative estimate would be that one out of every three men in the service of the Navy has venereal disease.

The report of the Surgeon-General of the Army shows the same sad state of affairs. Frequent estimates have been made of this disease in civil life, and the consensus of opinion is that in civil life, as high as seventy-five and eighty per cent of the men have, or have had, venereal diseases.

What an alarming state of affairs if it be true that three out of every four men have been smirched in this way! This fact alone ought to prove the necessity of wide-spread instruction.

A sentence of Stuart Mills' has been well quoted concerning the eradication of this great human sore which is so destructive to Society. He says, "The diseases of society can be no more checked or healed than those of the body without publicly speaking of them." He might have added they can only be stopped by placarding the contagion.

To ignore or deny the wide prevalence of the evil in the way often done is sometimes due to honest ignorance, but is also often an affectation and even a form of hypocrisy and cant. While scientific discussion of the subject may not be meant for the young, they nevertheless should, let us state positively, be instructed in it.

Having given the reasons for public school instruction on sex purity, I beg to submit for your earnest consideration and discussion the following syllabus of "Sex Instruction for High School Boys." It is my intention that this syllabus should be the basis of a girl's syllabus also which I have prepared for the use of the Newark High Schools.

I have tried to submit something practical and definite for High School Physical Training teachers to use in giving instruction in this subject. Many eminent authorities have written about sex hygiene; all are convinced of the necessity of teaching it in some definite way, and a committee from the Society of Sanitary and Moral Prophylaxis have made broad suggestions covering the work that ought to be taught to all ages of boys and girls. In this I propose to you some specific instruction to be used by gymnastic instructors, a class of teachers in whose hands I am certain it should be intrusted above all others.

SYLLABUS OF SEX INSTRUCTION FOR HIGH SCHOOL BOYS

- I. PHYSICAL EXAMINATION. (a) Measurement Card—*See Lecture.*
- II. VIRILITY. Its Meaning and Its Importance. Virility and Physical Development. Circular No. 8. Published by the Oregon Social Hygiene Society, Portland, Oregon. *See Lecture.*
- III. LIFE AND RELIGIOUS RITES—*See Lecture.*
- IV. THE ELEMENTS OF LIFE. *See Biology—See Lecture.*
- V. THE FAMILY OF MAMMALIA. *See Zoology—See Lecture.*
- VI. MALE AND FEMALE SEX ORGANS. Oregon State Board of Health. Circular No. 9 (cuts)—*See Lecture.*
- VII. OVUM. SPERMATOZA. SEMEN. Oregon State Board of Health. Circular No. 9 (cuts)—*See Lecture.*
- VIII. DEVELOPMENT OF THE FOETUS. Oregon State Board of Health. Circular No. 9 (cuts)—*See Lecture.*
- IX. TERMINOLOGY OF SEX—*See Lecture.*
- X. SEXUAL DESIRES. (a) Consequences. (b) Illegitimate Children. (c) Venereal Disease. Adolescence—Hall. Oregon State Board of Health. Circular No. 9.—*See Lecture.*
- XI. CAUSES OF VENEREAL DISEASE. Circular No. 9. Oregon State Board of Health.
- XII. GONORRHOEA (cuts). SYPHILIS (cuts). SOFT CHANCRES (cuts). Social Hygiene vs. The Sexual Plagues. Indiana State Board of Health. Oregon State Board of Health. Circular No. 9.
The Social Evil in University Life—*Robert N. Willson.*
- XIII. PROSTITUTES. Oregon State Board of Health. Circular No. 9.
- XIV. MASTURBATION. Adolescence—Hall.—*See Lecture.*
- XV. PERSONAL PURITY. Adolescence—Hall. Virility and Physical Development. Circular No. 8.—*See Lecture.*
- XVI. WHAT EVERY BOY SHOULD KNOW. Adolescence—Hall. Sexual Hygiene for Young Men. Spokane Society of Social and Moral Hygiene. Circular No. 5—*See Lecture.*
- XVII. CONCLUSION. The Price He Paid—Ella Wheeler Wilcox—*See Lecture.*

SUGGESTED SEX INSTRUCTIONS FOR HIGH SCHOOL BOYS

Gymnasium Instruction.

High school boys should be instructed in matters pertaining to personal anatomy and hygiene, and Sex Purity.

Classes assigned to the gymnasium should be divided into squads by the gymnasium director and he should appoint one of the squad as a leader.

Each squad is to be composed of six boys; therefore in a class of sixty boys there will be ten squads. The gymnasium director should supply each member with a duplicate pad on which are printed most of the usual questions required on chart records of physical examination. On these pads each squad under the direction of the squad leader must record his measurements, his family history, his knowledge of and attention to personal hygiene and a few answers to personal questions, which may aid the physical director in knowing the boy.

I herewith submit sample card of record:

Name.....Address.....
 Class.....Date.....Birthplace.....
 Family Physician.....
 General Health.....Pulse.....
 Hereditary diseases.....
 Father dead?.....Cause?.....
 Mother dead?.....Cause?.....
 How many children?.....

Check such of the following diseases as you have had:

Bronchitis	Malaria	Jaundice
Pneumonia	Scarlet Fever	Piles
Pleurisy	Typhoid Fever	Paralysis
Spitting of Blood	Mumps	Appendicitis
Asthma	Dyspepsia	Neuralgia
Hay Fever	Bilious Attacks	Sleeplessness
Colds in Head or Throat	Liver Complaint	Headache
Dizziness	Chronic Diarrhoea	Gout
Shortness of Breath	Dysentery	Rheumatism
Flat Foot	Habitual Constipation	Hernia
Injuries	Skin Eruptions	Varicose veins
Palpitation of the Heart		

	First Term	Second Term
Age.....		
Weight.....		
Height (Sitting.....		
(Standing.....		

First Term

Second Term

Neck.....	
Chest—repose.....	
Chest—after inspiration.....	
Chest—after expiration.....	
Waist.....	
Hips.....	
Thigh.....	
Calf.....	
Grip of the right hand.....	
Grip of the left hand.....	
Strength of lungs.....	
Number of pull ups.....	
Number of dips.....	

Check such of the following as you attend to daily:

Hands washed before and after meals, after toilet and before and after touching eyes
or sores
Teeth brushed after each meal
Clothes brushed
Hair brushed (washed at least every two weeks)
Cold sponge baths
Eyes washed out with boracic acid (if weak or subjected to strain)
A glass of water taken before dressing
Shoes brushed
Clean linen
Windows open each night before going to bed
Nails cleaned and the cuticle pushed back
Breathing and setting up exercises before dressing

Check such of the following as you are willing to be honest about:

Profane
Bad companions
Smoking without permission
Smutty stories
Indifferent, obstinate, diffident, sullen, quarrelsome, lazy

After receiving pads the squads, under their leaders, much in the same manner as a field party surveying, record with each other's help the different measurements, until the cards are filled out as full and completely as possible.

The personal questions each individual answers for himself.

The question at once arises, how can all this measurement be made with the meager equipment in most gymnasiums? The ten squads must be organized so that all the available apparatus will be in use; for example: one squad on the scales, one on the dynamometer, one on the spirometer, two on the parallels, two on the horizontal bars,

one with the tapes, two with the measuring rod, and between times the squad can fill out their questionnaires. Ingenuity in management with a change from one piece of apparatus to another will take care of most classes in one or two periods.

It is even recommended that responsibility be entirely thrown upon the squads themselves and that they be allowed to take their records out of school hours.

After these record cards have been made and a duplicate filed with the director a lecture should be given to this class at its next visit to the gymnasium. This lecture is as follows:

Virility. The members of this class have been taking strength tests and measurements of each other during the last one or two weeks and before we go on with our course, I desire to call your attention to the meaning of a word which every normal boy should have. This word is virility. Without virility not one of us will amount to much in this world. What is the meaning of it? It means strength for one thing, simple strength, however, is not enough to make a good football player, or to make a marathon runner, with strength we must have endurance. Even then, a boy may be lazy, so, to strength and endurance we must add energy; but with strength, endurance and energy we should not have a great fighter or a great railroad president. We must have courage for this, because no coward can be truly virile. Virility, therefore, means strength, endurance, energy and courage.

The great characters in history and the men of to-day whom we most admire, are men who have had this characteristic, and this quality is needed just as much in any sphere in life, whether it be exalted, medium, or humble. The main sources of virility, are good food, proper exercise, fresh air and rest; but, perhaps more important than these simple requirements, is the necessity that a certain fluid which is made by a gland on the outside of the body shall be absorbed by the blood. No one can be truly strong, enduring, energetic and courageous unless he conserves this life fluid of which I have much to tell you later.

You are all interested in the lives of your parents, in your own life, in the lives of your brothers and sisters—in short, in the mystery of life itself. This was a sacred subject early in the world's development. The cave man, and after him, tribes, and even nations, worshipped the God of Life and offered up sacrifices for his special favor. For many centuries afterwards the annual offering of children, burning them at a stake to appease God, so that all might live, was a religious custom. To-day, certain pagan religions teach that life passes from the human body into the body of wild animals. Thus, early man associ-

ated strange happenings, sorrow and mysterious rites with the coming and going of each new soul.

People are to-day largely ignorant of the real physiology of how man comes into the world and how he goes out of it. Scientists and doctors know the facts concerning the conception and the deliverance of children, but it has not been their habit to tell the secrets except in scientific books full of technical terms.

We are accustomed to reserve and prudery surrounding the intimate facts of life, partly because of this old religious influence and partly because there is a real delicacy of feeling in the hearts of all true men and women when they speak of these sacred relations which are the outcome of love.

But this is no reason why you and I, who are of the same sex, and who respect each other, should not speak together of life's secrets. Indeed it is a duty we owe ourselves, because there are so many consequences of ignorance.

Some of you boys are already very knowing because of smutty knowledge which is always being circulated in the world by foul-mouthed men. Did you ever stop to think of what that means? You boys admire nobility of character, you have ideals, your heroes are the great men who have made history. It is not men of this sort who bandy smutty stories and tell of foul relations with women. These men may give you information, but it is *not* the kind of information of which you can be proud.

I shall not pause to tell you about the lowest forms of life. This you have been taught, or in your reading you have come across the cell with its nucleus, which is the basis of all the higher types of life; and you know of the presence of sex even in the flowers and in the lower animal forms. We will start with the highest type of living creation which is known by scientists as the family of mammalia. In this group of the animal family, the young are carried within the mother's body and after birth nurse at the mother's breast.

All animals born into the world and nourished in infancy as we are, are furnished by Nature with either male or female organs. These organs are given us for the important work of continuing our species and keeping up the life of our race. In the body of the female are glands, or ovaries. These form a germ called an ovule which very much resembles an egg. There are many hundreds of these developed during the life of the woman. Some of them reach their full development at the end of every twenty-eight days, when, if they are not fertilized by the male, they die and have to be gotten rid of. This process of casting out of the body the dead ovules, results in a monthly flow of

blood which is given the technical name of menstruation. It is a normal and healthy function.

We all have certain organs in the body called glands. These glands are found in the cheek and in the neck and in other parts of the body. They secrete a fluid which is very necessary to health and life. Man has two of these glands which hang outside of his body in a sack. These two glands are called testicles. Testicles begin to secrete a fluid called semen when we reach the age of about fourteen or fifteen. This is the fluid I told you made virility.

Why does this fluid make virility? The reason is that the testicles secrete besides semen an internal secretion also. This internal secretion is absorbed into the blood and into the lymph. This intimate relation between the sexual system and the circulatory system has only recently been understood by the medical profession. Extended researches in the laboratories of Paris, Berlin, Vienna and Stockholm, have demonstrated that these intimate relations between blood vessels and the tubes of the testicles are for no other purpose than to permit the internal secretion of the testicles to gain access to the blood.

Let us give an example:

For a long time in human history it has been a common practice to remove the sexual glands from a large proportion of the male among domesticated animals. It has been known that this exerted a great influence but the significance of the whole matter has only recently been understood. In order to get a clear mental picture of what takes place in one of those animals let us consider the example of the horse.

When I was a boy I lived next to a horse trainer's estate. This man bred horses and kept the finest stallions in that part of the country. I well remember two beautiful male colts which grew up in the same corral. They were alike as two peas in a pod. When they grew to be about two years old I heard the horse trainer say one morning, "I shall have to have one of these colts castrated. I will send for the veterinarian and we will have it done to-morrow." When the veterinarian came the men caught one of the colts and with ropes threw him and held him down while the veterinarian, in less time than it takes to describe it, cut out the colt's testicles. In a few days this colt had recovered from the surgical operation, and had joined the other horses in the pasture.

Soon after this there was a great difference noticeable between these two young horses. When these two colts were three years old the one that had retained his testicles was one of the most beautiful horses that I had ever seen. He carried his head high, his mane was long and flowing, and there was fire in his eyes, and alertness and strength in every movement. The other colt was smaller, he did not arch his

neck, he had no fire in his eyes, he was just a common beast of burden. Now, what is the difference between these two animals? During all that year, one had received from his testicles every hour of the day, every day of the year, the mysterious potent something that had determined the direction of his development. This material which had exerted such a magical influence upon his development had been formed by his testicles, pouring into the lymph and blood, vitality and strength for the muscles, brain, and nervous system. The other colt, having lost his testicles, was deprived of the influence of such secretion and therefore, failed to develop this physical and temperamental characteristic typical of a stallion. What is true of a horse is also true of a man. The young man at puberty begins to receive from his testicles the internal secretion which leads to the development of his full manly powers and he must be careful not to interfere with this function by exhausting his supply of semen through self-abuse. This sum total of the qualities peculiar to mankind has been called *virility*. You, of course, want to know whether this lesson applies to you, whether, like the horse you can keep the semen in the body for months or even years without suffering any decrease of virility. The answer is most emphatically, "The lesson is the same for you as for the horse."

At the age of fourteen, sometimes a little later or earlier, boys undergo physical changes; the shoulders broaden, the lung capacity increases, the vocal cords lengthen and the voice changes. The hair begins to grow coarser and longer and covers almost entirely the whole body. The sexual organs themselves (the penis, scrotum, and the two testicles) naturally increase in size at this time. The later these changes take place, the better it is for the boy.

In the semen secreted by the testicles is found a germ which is called spermatozoon and which looks very much as a tiny tadpole. This germ has the power of fertilizing the ovule of the female. Many thousands of these spermatozoa live in this fluid and are either absorbed back into the system through the blood or are discharged by means of an "orgasm;" this is a word used by the doctors to indicate the completion of a sexual act, either by natural or unnatural methods.

During normal sexual intercourse, one or more of these spermatozoa may be carried into the uterus or womb of the female, there meeting the female element of life, which is the ovum. This spermatozoon penetrates the wall of the ovum or egg and from that moment a new life is begun. The ovum so fertilized lodges in the walls of the womb and some tiny blood vessels form round it and maintain its life. Nourished by these blood vessels from the mother it takes its life from her life, getting blood from her blood, and developing by processes which are magnificent and marvelous wonders of nature.

I have here a drawing showing the elements of life, the ovum and spermatozoon before they have become united.

Nine months it takes this small egg or ovum to develop fully and then it is ready for a separate existence and so is born—a new babe into the world. But to bear a child the mother suffers the most excruciating pains and passes through the dangerous perils of child birth, before a new being is brought into the world, a being of flesh and blood, animated by a God-given soul, a marvelous tribute to the power of the unseen forces which are given to man through the sex function to re-create his kind.

That man who degrades woman degrades the one who risked her life in bringing him into the world. And as the union of man and woman played a part in each son's birth, so the sexual union and the knowledge of sexual things are entitled to respectful study and decent interpretation. Here are cuts showing the growth of the foetus, which is the name given to the unborn child.

In this connection, boys, I think a few words will not be amiss concerning the rotten terminology you are accustomed to hear and perhaps have not been above using yourselves. I refer to the language of the street used in talking of women and the relations between men and women. I have no false confidence of my ability to change your habits in this respect. I make my plea, basing it upon the respect you have for all good and true women. I will not say the foul language and obscene stories will hurt you, but I will say that the men you hear using this kind of language will, with very few exceptions, in the general average of men, class below (C).

Here is a list of words with their definitions which I recommend for your vocabulary:

Scrotum—The external pouch which contains the testicles.

Testicles—Male genital glands which secrete semen.

Semen—Fluid produced by the male reproductive organs or testicles.

Penis—Male organ of reproduction.

Urine—A fluid excreted from the kidneys.

Anus—Outer openings of the alimentary canal.

Stools—Refuse from the bowels.

Cohabitation or Copulation—Sexual union.

Orgasm—The completion of the sexual act.

Masturbation or Self-abuse—An artificial sexual act. Self-abuse.

Many a man has wondered why God has afflicted him with a taste for sexual pleasure which he is unable to gratify. The reason for it is that without this desire the world would very soon be depopulated and the human race would cease to exist. No one would desire to marry

or run the risk of raising a family. The world needs the attraction between the sexes and it uses it to repopulate the earth. But if this power were used indiscriminately by human beings, vast harm would be done. Perhaps the most dangerous result would be the production of illegitimate children in large numbers. I think if anyone of you will draw a picture of these poor little outcasts, friendless, without any father or friends, the mother ashamed of their existence, all people shunning them, it would touch your heart so that not one of you would ever think of being the cause of so much suffering. Good men have for this reason recognized the debt they owed to their children and have made rules to guard them. Marriage laws are the result and the universal recognition of their necessity, distinguishes civilization from savagery. Upon the honor with which we individually observe these rules, depends not only on the welfare of the state, but of the individual himself.

Because of the active and incessant desire for sexual intercourse, man is at times tempted to exercise it without legal rights, and before marriage. But it seems as if Nature coöperates with the laws of man, by severely punishing those who abuse sexual activity. Man cannot exercise this function unlawfully without running great danger. The consequences of abuse of the act of orgasm may be stated as follows:

1. To the individual—

- (a) Through the production of one or more of the great venereal diseases, gonorrhoea, syphilis, soft chancres, and their results.
- (b) Through weakening influences upon his body and mind and the destruction of his higher moral sense.

2. Upon the race of which he is but a part and to which he owes a duty—

- (a) Through a production of illegitimate children with all the misfortune which illegitimacy implies.
- (b) Through the harm done to womenkind through prostituting one or more of them.
- (c) Through the destruction of human life.

The Origin of Venereal Diseases. I shall turn now to a description of the venereal diseases which afflict mankind and which are called *the great red plague of humanity*. I wish you boys to understand all things so you can make a choice of the way you wish to live. I cannot be sure you will choose the right way, but I shall have given the facts on which all can base their choice.

The sex organs are lined with delicate tissues which are continually covered with a jelly-like secretion. These membranes as they are called are highly developed by Nature to maintain the germ of life. But,

other kinds of germs can also develop in this membrane and these are not what Nature planned for. Accordingly, any foul germ which lodges in the depressions of the mucous membrane of the sex organs finds a rich resting place, designated by Nature to maintain child life, but easily turned from its normal function. There are certain germs that have a preference for the sex organs and flourish there to great advantage. Especially in the unclean is this true, and the sex organs of those who neglect ordinary rules of cleanliness, reek with germ life.

There are three horrible diseases which select these membranes in which to flourish. They are gonorrhœa, sometimes called clap, syphilis, and soft chancres. Once these diseases have fastened themselves on an individual, that person becomes a hot-bed of infection, and any healthy person having sex connection with the one afflicted will almost certainly catch the disease himself. This is not the worst feature by any means.

Gonorrhœa. With gonorrhœa, which develops several days after the healthy parts have been affected, there is a yellowish discharge from the penis or the vagina and this discharge is so virulent that should it be communicated to the eye from rubbing with an unclean hand, the eye will in all probability be eaten away and total blindness result. Again, this discharge sometimes works backward into the bladder and testicles, which swell and are exceedingly painful and dangerous. After a few weeks, the discharge is less abundant and the pain subsides but even then the disease is not cured. It is almost certain to reappear under the influence of alcoholic drinking or highly seasoned food or following sexual intercourse. The men who boast of having had a dozen cases of gonorrhœa, usually have had it but once, each new "dose" being but a reappearance of the disease.

Very sad are some of the cases of man's depravity. Years after the original disease, a trusting innocent bride who has given herself into the keeping of some selfish man will be stricken with this loathsome scourge, and it may even claim her life as the sacrifice. For in the woman this disease is far more dangerous than in the man. Here the germs invade the womb, attack the ovaries and abscesses are formed. If this happens they can only be relieved by an operation, which may cause death and if the operation is not performed, death may result from the abscesses bursting inside the body. This is the important and pitiful part of this infection—*innocent wives infected by husbands who believed themselves cured*. Wives who recover from this operation are as a rule *sterile* and can never become mothers.

But we have not reached the horrible end yet. The child born of a mother with gonorrhœa is in great danger of losing its sight. The

membranes of the eyes are like those of the sex organs, especially fitted for the growth of the gonorrhœal germ. Doctors say that one-fourth of all the blindness in the civilized world is due to this cause alone—Gonorrhœa or Clap.

This is the disease often spoken of as "No worse than a bad cold." What do you think about it?

Syphilis. This disease is due to a pale, spiral shaped worm which gets into the slightly torn membrane of the sex organs. After about three weeks a sore appears at the place infected. This sore is called "chancre." It is the beginning of syphilis. The patient now becomes sick, has headache, some fever, tiredness, and other symptoms. After four or five weeks sores form in the mouth and throat, the mucous patches of syphilis. Mucous patches are themselves as poisonous as chancre. With this the skin is covered with an eruption and the hair falls out in patches. From this time on no one can be sure what will happen.

The disease may attack any part of the body—no organs are exempt. Sometimes the heart and liver are attacked, sometimes the brain or the spinal cord is affected, and paralysis or death then follows in a short time. Locomotor ataxia is almost always the after effect of syphilis. It takes three or four years to recover from the disease, even when it is put in the hands of a responsible physician at its very first indication. I have not the time to tell you of all the disastrous results this disease brings upon the children of those parents who first contracted it. Let it suffice that generations of men have cursed their sires and their grand-sires because of the afflictions which have been passed down to them through the selfishness and carnal corruptions of those to whom they owe their existence.

Infection is not only transmitted by sexual intercourse but frequently by means of knives, forks, spoons, drinking glasses, pipes, cigars, and handkerchiefs. Kissing has also been stated as one of the most frequent methods of contagion. There is danger in any abraded surface upon the body when in company with a syphilitic in the more infectious stages of the disease. A mother may infect a baby, a baby may infect a nurse, a father may infect the whole family. I have here a few pictures of syphiletics.

Soft Chancres. These are filth sores. They appear a few days after exposure and form ulcers on the sex organs. From them pus is carried into the glands of the groin, where abscesses form. They are sometimes called "blue balls." They are less dangerous than either gonorrhœa or syphilis, but are more repugnant, because they are so purely filth products.

It must never be forgotten, however, that they may hide true chancres, which is the first sore of syphilis. They sometimes accompany gonorrhœa or syphilis, and occasionally all three diseases are contracted at the same time.

Boys, these are the diseases any man may catch and surely will catch if he gives himself over to the carnal and unlawful pleasures of sex gratification. Can you boys think of anything more pitiful than the suffering caused in this selfish way? Can you think of anything more despicable than some son, or father, uncle, or lover, passing this horrible plague to the innocent members of his family or the trusting ones of his love. A kiss, a caress, for some dear one, may convey the germs which will bring interminable suffering. These diseases are known as the great red plague and they are indeed a plague more general and more insidious than any of the great plagues which afflict man.

Prostitutes. The immediate conveyors of this great red plague are an army of women who sell the use of their bodies to man for the purpose of gratifying their sex desire. They are called prostitutes.

Most girls go astray because some boy or man, one whom they trusted, harassed them until they were too weak to resist. Once having been robbed of their virtuous womanhood what is left? Sensitive girls can no longer live a life of hypocrisy under a parent's roof. Shame drives them to the brothel where they soon fade and die. "What brings these girls here?" was asked of a notorious matron. "Misery," she answered quietly, "always misery." "I do not know one who came here who was not driven here by misery."

Every prostitute, public or private, acquires venereal disease sooner or later. Hence all of them are diseased some of the time and some practically all the time. The man who patronizes them risks his own health and the health of his future family at every exposure. Physicians who treat these diseases tell us that bad girls who belong to good families are as likely to give disease as professional prostitutes, because you can never tell with that kind of girl who may consort with her.

No system of medical inspection, no physician's certificate is of value in insuring the prostitute's health. Though medical examination may throw out those who are badly diseased it gives a sense of security that is false and misleading, because the persistence and contagion of gonorrhœa and syphilis after they are outwardly cured lies deep in those membranes where germs develop so easily.

Before leaving this subject of prostitution, I wish to give you some facts which ought to influence your future conduct. There are said to be more than 600,000 prostitutes in the United States. Of this great army the great majority are led astray. Statistics show that

these girls lose their honor between the ages of 15 and 18 years, before they have reached an age of discretion and during the period of life when their judgment is not strongly enough developed to give them an equal chance in a struggle against man's dastardly overtures. After one mis-step they can never again go back to a mother's protecting arms; they are turned away from the door and become outcasts of society. These girls soon tire of the frightful orgies they are obliged to submit to, but escape is impossible, for society will never forgive or give them another chance. They are doomed to sink lower and lower in the scale of their despicable profession.

Four years is the average life of a girl who starts upon this career. Somebody's daughter, perhaps a good and beautiful girl, is dragged down by the thoughtless selfishness of some boy or man to this hellish existence:

A boy should take no liberties with any girl that he would not have another boy take with his own sister, and a boy that would even suggest to a girl any step that he knew might later lead to her downfall, while his reputation remained unhurt is a base coward.

I started on this talk with a definition of the word virility. I am now going to touch upon a vice that saps the virility of more young men than we like to think about. Boys, as you value the success you hope to have on the ball-field, or the cinder path, as you value ambition, as you cherish the hope of some day being a leader among men, avoid secret self-abuse. Future power, wealth, ambition, fame, the hope of all these you throw aside for a few moments of secret and contemptible self-gratification. Doctors call this sin masturbation.

Masturbation. It is one of the very saddest of all human weaknesses—the sin of onanism or self-abuse. Wherever this occurs, physicians who examined into the nervous aspect of this sin, tell us the race deteriorates. The children of a masturbator have less vitality, are arrested in their full development, and have less and enfeebled power to further transmit their kind.

But of more immediate effect on the individual himself is that the masturbator has a sense of his unworthiness, and lacks self-respect. He is bashful, afraid of the opposite sex, and is often silent and solitary, avoiding the manly sports of other boys.

Some of the most direct moral effects of this vice are hypocrisy, timidity, and cowardice. The victim has neither self-control nor will power, cannot grapple with difficult problems, physical or mental and cannot stick to any work until it is completed. Thus growth, especially in the moral and intellectual region, is dwarfed and stunted. The practice of this vice causes many nervous disorders also, some writers even

claiming it is the cause of some types of insanity. The masturbator can only discontinue his practice by an exercise of great will power. *He* must first have the desire to be pure and healthy and then he must have the will power to refrain.

Personal Purity. Sexual temptations and excitement may be almost avoided by observing the following suggestions:

1. Keep the mind pure and as free as possible from sexual matters.
2. Eat plain, wholesome food, avoiding highly seasoned articles of diet and do not gormandize.
3. Avoid tobacco and alcohol in all its forms.
4. Keep the bowels regular. Have at least one free passage daily.
5. Take plenty of good exercise, either in the form of work or play and spend as much time as possible out of doors.
6. Seek the company of pure-minded companions.
7. Take all the sleep needed, but get up immediately upon awakening in the morning. Do not sleep on a feather bed or anything soft that will produce a weakening perspiration. Have the outer air circulate through the sleeping room and keep the arms and shoulders above the covers.
8. Bathe once or twice a week with warm water to keep clean and follow such a bath with a quick cold shower bath and a vigorous rub-down. A daily shower or a plunge quickly taken and followed by a rub-down to insure the proper reaction may be used with profit, provided the boy is robust, and such bathing does not tax his vitality. The foreskin of the sex organ should be in such a condition that it can be drawn back when bathing and washed clean. This will prevent the accumulation of an irritating, cheesy substance called smegma. If the condition of the organ prevents it being thus kept clean, the boy, upon the advice of a reputable physician should be circumcised.
9. Cold is one of the best checks upon sexual desire. Cold washing without wiping has special advantage.
10. As a diet, bread, milk, vegetables and plenty of fruit are recommended, but little meat should be eaten, and eggs, spices, perfumes and coffee should be avoided as dangerous.
11. Trousers and underwear should not be too tight.
12. The hands and neck should not be too warmly covered in cold weather.

If you have been curious about these matters heretofore, now your curiosity is satisfied you can dismiss all these matters from your mind. Don't worry about glands or anything else. Live a healthy life and Nature will take excellent care of you.

What Every Boy Should Know. All young men at some time in their lives suffer a great deal of nervous apprehension because they are ignorant of sex laws and sex activity. That knowledge you have gained has come mainly through the medium of vulgar stories and indecent literature issued by quacks and fakers who reap rich rewards through filling their victims with misinformation. It is in this state of mind that boys need fathers, pastor, teachers or mature friends. Boys have been taught, for example, that night emissions are dangerous and lead to serious consequences, such as lost manhood, debility, insanity, and even death. This is an outrageous falsehood. It is Nature's way of taking care of the excess semen which cannot be absorbed into the body. Emissions do not indicate an unhealthy condition of the sexual organs unless they take place oftener than once in ten days. So, too, there is no need of worry over the size, direction, shape of either the penis or testicles. The unequal hanging of the testicles does not indicate anything; usually the left testicle is lower than the right. Slight cases of varicocele (or enlargement of the veins in the scrotum) are not uncommon in boys fifteen or sixteen years old. Nor should the boy be frightened if he has bad dreams, and unreliable memory, pimples, blotches or is easily fatigued. Usually this condition arises from bad food or late hours.

Many natural conditions are lurid danger signals according to the quack, who claims there is no time to lose, or lost manhood will result. As a matter of fact, these symptoms are quite common to this age of youth and are used simply to frighten the innocent victims so that they will pay out money for quack medicine. Nearly \$100,000 has been spent in a single year in the City of Portland for advertising which is a fake. For example: Disorders such as acne (the eruptions of pimples seen on the face of almost all boys and girls between sixteen and twenty) are not usually harmful. If you have pimples or black-heads they should be pushed out with a clean cloth and washed with an astringent antiseptic, such as peroxide of hydrogen.

If any of these symptoms are frequent or troublesome perhaps some little defect in the mode of life causes them and the family doctor should be visited. Let me urge upon you: If any one of you should need the services of a doctor, don't be afraid to go to the best one you know of and confess your trouble.

Men who have venereal disease ought to be cured but they should

go to the best physicians in the community who are known as men of honor, and be cured, if cure is possible.

Sex Necessity or the Double Standard a Lie. In conclusion, I wish to make one more statement for your guidance. It is sometimes said that sexual intercourse for the man is necessary for health. This belief is not well founded. The statement is a lie. As a scientific fact neither young stallions nor young bulls are used for breeding purposes until they are fully grown and this is for two reasons: First, the resulting colt or calf would not be up to standard, and second, neither the stallion or the bull would sell for as much money when he grew to maturing, because the stock breeders could not be sure of getting offspring from his service, as the saying is:

This proves that using the sex organs in youth is sure to produce results that are bad. The testicles are glands producing a fluid like the tear glands or the sweat glands. The sexual power is never lost through abstinence from cohabitation, any more than the ability to weep is lost through abstinence from weeping.

In the animal world the young male is prevented from sexual activity by the older ones. He cannot have his mate until he is old and strong enough to fight and win her—in other words until he is developed. Amongst men the celibate (that is the unmarried sexually pure male) stands well in the front rank. No one can prove that sexual continence and purity are injurious. In ancient Sparta the boys at twelve exchanged the togs for the man's pallium and they slept on straw or hay with no cover over their bodies, and when fifteen they slept on reeds beside their spear and shield. It was from such stern training as this that patriotism, honor, and heroic deeds arose. Contrast the Spartan warriors with the sensual hordes of Zenaphone, who could not be moved without the women of the harem. Sexually weak, unclean minded boys of to-day look upon sex life as a means of pleasure and see in every girl and every woman an object to gratify this desire. What a disgrace such a man is! That man degrades woman and brings her down from the high pedestal on which she ought to stand and where she does stand in the eyes of clean, manly men.

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LA EDUCACION SEXUAL

Lo Que en México se ha Hecho a Este Respecto

POR

MANUEL VELÁSQUEZ ANDRADE

I.

El movimiento iniciado en pro de la instrucción de jóvenes y adultos de uno y otro sexo sobre el tan discutido problema de lo que deben y conviene que sepan acerca de la higiene de su sexo, nos ha venido de los países sajones donde sin vacilaciones, escrúpulos o sentimentalismos han abordado empresa tan delicada como necesaria.

En nuestro país en punto a instrucción sexual como en otras muchas cosas que atañen al bienestar y prosperidad de la nación y al progreso y porvenir de nuestra raza, andamos atrasados, sin embargo, algo se ha hecho ya, un poco más se intenta hacer y mucho esperamos que llegará a realizarse.

El sentimiento social mexicano, especialmente el de la clase media intelectual, es adverso a una instrucción sexual obligatoria, sistemática y gradual en razón de los antecedentes de educación recibida en el hogar y de las creencias religiosas.

No ignora esta sociedad que el problema sexual existe, que sus peligros y consecuencias son serias y de trascendencia, mas prefiere curar los males que resultan de esa ignorancia que prevenirlos por medio de una racional, oportuna y discreta enseñanza.

Esta lamentable conducta ha favorecido en gran manera la escuela de todos los vicios individuales, privados y públicos no teniendo los jóvenes más restricciones que las que impone el estado de impotencia a que llegan atacados de alguna enfermedad venéreo-sifilítica.

Si al menos nuestra juventud masculina llegase a la edad que alcanzan los jóvenes de otras razas sin haber tenido el más leve contacto sexual ni haber pervertido su instinto procreador, podría justificarse ese anhelado silencio de toda enseñanza, basándolo en el más o menos fundado temor de sugerirle al niño, joven o adulto, nociones o deseos que jamás habían pasado antes por su imaginación.

II.

La "*Sociedad Mexicana de Profilaxis Sanitaria y Moral de las Enfermedades Venéreas*" formada de médicos, abogados, sacerdotes, militares, maestros de escuela y particulares, ha sido la primera institución

social que ha emprendido verdaderos y serios esfuerzos en pro de la divulgación y enseñanza pública de los principios de la higiene sexual.

Esta meritísima Sociedad inauguró sus trabajos en el año de 1908 en vista de hechos altamente desconsoladores y con el propósito de contribuir a remediar desde los puntos de vista instructivo, moral y terapéutico el desenfreno sexual que sus fundadores en el ejercicio de su profesión médica venían observando desde hacía mucho tiempo.

Desde su fundación hasta el presente esta Agrupación ha realizado su misión con suma modestia, perseverancia y excelentes resultados.

Su labor ha tenido dos aspectos: el de una propaganda instructiva-doctrinaria y el de una acción preventiva y curativa.

La primera la ha realizado mediante la discusión entre sus coasociados y la publicación en el periódico "*La Cruz Blanca*" órgano de dicha Sociedad, de temas higiénicos, sociales, legales y morales relacionados con el problema del sexo y la segunda, por medio de conferencias en algunas escuelas profesionales y haciendo fundar a su iniciativa "*Dispensarios Gratuitos*" para la curación de los que padecen enfermedades venéreo-sifilíticas.

Entre los trabajos más importantes de que se ha ocupado la Sociedad podemos señalar los siguientes:

I. "*El dictamen presentado ante la Academia Nacional de Medicina sobre la manera de organizar en México la lucha contra las enfermedades venéreas*" y cuya resolución fue esta:

"La Academia Nacional de Medicina invitará a las otras sociedades científicas de la Capital, a los Institutos, a las Escuelas, a los Hospitales, a la prensa, &. para que nombren delegados que cooperen con el carácter de miembros fundadores a la creación de una "*Sociedad Mexicana de Profilaxis Sanitaria y Moral*."

II. "*¿Es útil divulgar los conocimientos relativos a la sífilis y a las otras enfermedades venéreas? En caso afirmativo, ¿cuáles son los conocimientos que se deben divulgar y qué medios deben emplearse para conseguir ese fin?*" (Dr. R. Cicero).

Su autor llega a estas conclusiones:

"I. Sí es útil la divulgación de los conocimientos relativos a las enfermedades venéreas desde los puntos de vista, sanitario y moral.

II. Esta vulgarización debe hacerse entre los miembros de la sociedad y la juventud masculina muy particularmente.

III. Toca principalmente a los médicos, padres de familia, pedagogos y sacerdotes impartir esta instrucción y

IV. Los medios de vulgarización serán: el folleto, las conversaciones individuales, las conferencias, &."

III. "*Notas breves acerca de la lucha contra la pornografía*" (Dr. J. Cosío).

Termina con las siguientes proposiciones:

"I. Suplíquese a las autoridades competentes que legislen acerca de la fabricación y comercio de objetos inmorales.

II. Que se apliquen con todo rigor las penas que se señalen.

III. Que la Sociedad Mexicana de Profilaxis Sanitaria y Moral dicte las medidas conducentes para propagar las buenas costumbres y combatir la pornografía y

IV. Que la misma Sociedad se adhiera al Congreso Internacional contra la pornografía y que tenga representación en las próximas reuniones."

IV. "*Inconvenientes que presenté a el uso de medicinas de patente para la curación de las enfermedades venéreas, por las simples instrucciones que contienen los prospectos que las acompañan*" (Dr. A. Calderón).

"Estudio desde los puntos de vista médico, en lo que se refiere a lo erróneo del diagnóstico; terapéutico, por el falso tratamiento de la enfermedad y mala aplicación de las drogas; higiénico; social, por los males que resultan a la familia, a la comunidad y a la raza y por último, moral, porque la pérdida de la salud imposibilita para trabajar en bien de su misma familia y de sus semejantes."

V. "*La moral social y sus relaciones con la moral médica en lo concerniente a la profilaxis de las enfermedades venéreas*" (Dr. S. García).

Termina el escritor con este bello pensamiento:

"Nuestro labor principal es vencer el egoísmo humano, convencer a la sociedad con razones y con ejemplos de que es interés suyo de vital importancia allegar todos los recursos indispensables para combatir la propagación de las enfermedades de que nos ocupamos."

VI. "*Peligros del Beso*" (Dra. S. Régules).

Trabajo en el cual su autora pide:

"No besar en el saludo. No besar a los enfermos. Que los enfermos no besen."

VII. "*La profilaxis implica enseñanza previa*" (M. Márquez San Juan).

Y para dicha enseñanza pide y propone:

"La amplia y profusa circulación de folletos como los del Dr. Fournier; las conferencias y la formación de un Museo Anatómico, de entrada libre para el público

VIII. "*La boca es un peligroso foco de contaminaciones. La higiene de la boca debe dominar en las costumbres*" (Dr. E. Landa).

Tema cuyo resumen es:

"La boca es un centro de muchas enfermedades; hay padecimientos bucales transmisibles y otras no contagiosos; pero aún los últimos constituyen un peligro; cuando la boca está enferma contiene mayor cantidad de gérmenes patógenos; la boca más sana y mejor cuidada contiene microbios; la boca puede ser, por consiguiente, un foco de contaminaciones."

IX. "*Papel que desempeña el amor a la humanidad y límites que debe tener en la asistencia de los enfermos*" (Dr. S. García).

"En suma manda el altruismo atender a los semejantes que sufren, impartirles la asistencia personal que sea necesario para curarles o aliviarles sus dolencias; pero ello debe hacerse procurando siempre cumplir con las reglas de la Higiene y si hay que saber dominar los impulsos egoístas que tienden a alejarnos incondicionalmente de los enfermos contagiosos, hay también que saber sujetar aquellos excesivamente altruistas que nos pueden llevar al peligro inútilmente y suprimir la asistencia innecesaria, el uso también innecesario de los utensilios contaminados, y nunca acariciar y menos besar a los enfermos."

X. "*Pedagogía Sexual*" (Prof. M. Velázquez Andrade).

Programa de enseñanza:

I. Instrucción fisiológica e higiénica.

II. Instrucción moral sexual e

III. Instrucción técnica y recreativa.

"Este programa se desarrollará con los maestros y con los alumnos. Deberá ser sistemático y gradual."

XI. "*El Problema Sexual*" (Prof. D. H. Berlanga).

"Estudio sintético acerca de lo que en Alemania se ha hecho sobre educación sexual, para servir de base a los futuros trabajos de la Sociedad Mexicana Sanitaria y Moral."

XII. "*La Sífilis Vacunal en México*" (Dr. V. Rojas).

"Este documentado y bien pensado trabajo por su importancia social y médica así como por la amplitud de su exposición doctrinaria

mereció publicarse en un folleto especial que se repartió entre las personas interesadas en la solución de tan trascendental cuestión.

El autor concluye por demostrar la superioridad de la vacuna animal sobre la vacuna de brazo a brazo."

XXIII. "*Ligero Estudio Sobre la Vacuna*" (Dra. S. Régules).

Conclusiones: "Las dos vacunas producen inmunidad contra la viruela. Las dos necesitan revacunaciones periódicas para mantener la inmunidad. La vacuna animal evita infecciones secundarias y transmisión de enfermedades al vacunar. La vacuna humanizada no puede evitarlas. La abundancia de la vacuna animal permite establecer un servicio perfecto de lucha contra la viruela. Los países que han logrado exterminarla usan la vacuna animal. La penuria de la humanizada hace ilusoria la campaña contra la viruela."

XXIV. "*A Que Edad Debe Efectuarse el Matrimonio*" (Dr. R. Varela).

"Creemos, dice el autor, que el matrimonio debe aconsejarse entre los 24 y 28 años para el hombre y entre los 22 y 26 años para la mujer."

XXV. "*La Lucha Contra la Pornografía en Alemania*" (Prof. David G. Berlanga).

"Para luchar contra la pornografía, deberá hacerse competencia a la literatura inmoral popularizando los libros y obras artísticas que fueran capaces de sembrar en el pueblo sentimientos elevados. Sería, por lo tanto, una labor práctica para la Sociedad de Profilaxis, estudiar las condiciones que debería reunir una biblioteca popular y trabajar para facilitar la adquisición de obras constituyentes."

XXVI. "*La Influencia del Charlatanismo en la Propagación de las Enfermedades Venéreas*" (Dr. E. Landa).

El escritor concluye su exposición pidiendo:

I. Expedición de leyes mexicanas que garanticen el ejercicio de la medicina.

II. Reglamentación y censura hecha por el gobierno acerca de los anuncios y reclamos sobre curación de la esterilidad, impotencia y las medicinas de patente y

III. Prohibición de parte de los periódicos para publicar en sus columnas reclamos de específicos para el tratamiento de las enfermedades venéreas."

XXVII. "*Acerca de la Reacción de Wasserman*" (Dr. G. Escalona).

"No es difícil concluir de lo expuesto que la reacción de Wasserman no es un medio seguro para saber si un individuo es un sífilítico o no;

y que no es tampoco aquella un recurso fácil para aplicarlo corrientemente. No cabe duda que a la clínica puede prestarle grandes servicios como se los prestan los trabajos de laboratorio que continuamente se aprovechan; pero no ha llegado aún el periodo en que sus resultados sean seguros y su técnica sencilla o práctica como se dice en el lenguaje actual, sirvan en todos los casos."

XXVIII. "*Modo de Proteger a las Nodrizas del Contagio de la Heredo-Sífilis*" (Dr. D. López).

Su ator aconseja las siguientes precauciones:

"I. El reconocimiento médico previo tanto de la nodriza como de la criatura que va a ser amamantada.

II. Rehusar una nodriza para una criatura en posesión de la heredo-sífilis sea latente o manifiesta.

III. Los niños heredo-sifilíticos solo pueden ser amamantados por la madre o por lactancia artificial.

IV. En el momento que se descubre en una criatura amamantada por nodriza alguna manifestación sifilítica se suspenderá desde luego esa lactancia pudiendo continuarse si se descubre que la nodriza ha sido ya contagiada.

V. Debe difundirse el conocimiento de la leche esterilizada como un medio de crianza y

VI. El servicio público de las nodrizas debe ser vigilado por nuestras autoridades en materia sanitaria dictándose los reglamentos necesarios que protejan los intereses de la sociedad y las nodrizas."

XXIX. "*Anuncios Inmorales*" (Prof. A. Herrera).

"Creo, por lo tanto, que la Sociedad de Profilaxis podría estudiar el asunto y averiguar si hay algunas penas en nuestros códigos para castigar tales delitos contra el pudor, la moral, &c. y si sería posible que en casos especiales y bien meditados previo informe de una Comisión competente se obtuviera la supresión o modificación de los avisos inmorales y aún la destrucción de los que vengan del exterior y sean señalados a la Administración de Correos por esta Sociedad y otras semejantes así como por las autoridades respectivas."

XXX. "*Ensayo Sobre Legislación Sanitaria de los Matrimonios*" (Dr. A. Benavides).

"Por lo expuesto me permitiría proponer que se reformase nuestra legislación en el sentido de que sea requisito para contraer matrimonio el que ambos contrayentes, al solicitar su enlace, presenten ante la autoridad debida su certificado de sanidad."

XXXI. "*A los Padres de Familia Para Cuando de Inicie la pubertad de sus Hijos*" (Lic. V. Sánchez Cavito).

El autor termina su brillante estudio con esta conminación:

"Sed tan severos como querrais con vuestros hijos; pero si descuidais su integridad física, si atentais contra ella, el Poder Público deberá intervenir en nombre de intereses sociales carísimos, cuya conservación es fundamental en las agrupaciones humanas."

XXXII. "*Costumbres, Leyes e Instituciones*" (Ing. A. Aragón).

"Nosotros, modestos, humildes abejas que volamos de la flor de la verdad a la flor del amor a los semejantes- como le llama Ripalda a la caridad-contentémonos con trazar los cimientos de un edificio que no veremos, porque levantarlo hasta la techumbre es obra secular y vayamos rectamente a nuestro fin sin que nos aturdan las voces de desconcierto de esta edad de escepticismos, ni nos causen desmayos las múltiples enfermedades sociales que a gritos piden curación."

XXXIII. "*El Problema Sexual en la Escuela*" (Prof. M. V. Andrade).

"En resumen podemos decir:"

I. Importa que la escuela instruya a los adolescentes en materias de su sexo.

II. Para que esa instrucción sea provechosa y útil y pueda impartirse se requiere que los maestros sigan cursos especiales en las escuelas normales y en academias y

III. Los temas de enseñanza sexual serán sacados de la higiene personal, la moral, social y la historia natural."

XXXIV. "*El Matrimonio Como Agente Profiláctico, Sanitario y Moral en la Sociedad Mexicana*" (Dr. A. Benavides y Lic. R. E. Ruiz).

"Conclusiones:"

I. El matrimonio no es un agente de profilaxis venérea, ni de moral social, si no en casos excepcionales y como causa concurrente;

II. Debe iniciarse la expedición de leyes que prohiban y repriman el comercio de artículos anunciados como preventivos de las enfermedades o contagios venéreos o como preventivos de la procreación.

III. En iguales términos se debe impedir la venta y aún el anuncio de libros que indiquen procedimientos encaminados a tales fines. De la prohibición quedarán exep tuados los libros de reconocido carácter científico, que, a diferencia de los otros no se encaminen a despertar

pasiones o a garantizar el desbordamiento de éstas por la impunidad de los resultados supuestos."

IV. Deben iniciarse proyectos de leyes encaminados a proteger en el hogar en el momento de consumarse el matrimonio, contra enfermedades venéreas y a nulificar el matrimonio que se celebre por cónyuges que padezcan tales enfermedades.'

V. La enfermedad venérea contraída durante el matrimonio debe ser motivo de divorcio y

VI. Sin perjuicio de otras reformas especiales que se deriven del conjunto de este estudio, debe someterse al gobierno la necesidad de introducir varias reformas en los códigos penal y civil."

XXXV. "*En Nuestro Medio Social es Conveniente la Educación de Niños y Niñas en Común?*" (Dr. M. Silva).

"Basta pensar que en México la precocidad de periodo pre-púber es alarmantísima, debido esto sin duda al abuso de excitantes psíquicos, que como es bien sabido precipitan a su vez y de manera ineludible, los acontecimientos orgánicos; excitantes de los cuales trataré en estudios ulteriores, pero entre los que hay que mencionar, desde ahora, la promiscuidad de niños de distinto sexo en habitaciones en que la acumulación es espantosa; el cinematógrafo, que de un modo tan funesto inicia a la niñez en los secretos sexuales, en los horrores de la vida licenciosa y aún en horripilantes detalles de lata criminalidad; el mal ejemplo que la embriaguez y la prostitución difunden sobre todo en nuestras clases desheredadas y otras mil causas que sería prolijo enumerar y cuya trascendencia no puede escaparse de la proverbial ilustración de mis consocios; es suficiente todo esto, repito, para contestar negativamente y tan sólo desde los puntos de vista en que me he colocado."

Además de los trabajos académicos antes mencionados la Sociedad de Profilaxis ha iniciado y realizado estos otros:

I. La sustitución de la vacuna humanizada por la animal.

II. La reforma de varios artículos de los códigos mexicanos penal y civil en lo referente a las causas de nulidad de matrimonio desde el punto de vista de las enfermedades venéreo- sifilíticas.

III. La creación de un laboratorio anexo al del Consejo Superior de Salubridad para la investigación del gonococcus y la aplicación gratuita de la reacción de Wasserman.

IV. La fundación de una oficina de estadística de enfermedades venéreo-sifilíticas.

V. Exposición ante las autoridades gubernativas de los inconvenientes de la concentración de las prostitutas.

VI. Venta por cuenta de la Sociedad de tubos de linfa vacunal animal.

VII. La sociedad ha publicado los interesantes folletos:

“Posibilidad de que se trasmita la sífilis por medio de la vacuna humana” por el Dr. V. Rojas.

VIII. “La prostitución reglamentada. Su inutilidad y sus peligros” por el Sr. Don. Carlos Roumanagc.

IX. “La buena reglamentación de las prostitutas. Es conveniente, útil y sin peligros” por el Dr. E. Lavelle Carvajal.

X. Hizo una reimpresión del folleto del Dr. Fournier titulado: “Para cuando nuestros hijos tengan 18 años” repártiéndolo entre los jóvenes de las escuelas, preparatoria, profesionales y el Colegio Militar.

XI. Por último, una Comisión tiene en estudio la formación de dos cartillas, una para jóvenes y otra para jóvenes señoritas sobre indicaciones y consejos higiénicos y morales relativos a su sexo.

En resumen: La Sociedad Mexicana de Profilaxis Sanitaria y Moral es una institución social de carácter privado que se ha propuesto la nobilísima misión de instruir y prevenir a la sociedad mexicana en general y a la juventud en particular, acerca del verdadero significado de la vida sexual y de los peligros que acarrearán las enfermedades venéreo-sifilíticas y de padecerlas ya, curarlas en los “dispensarios gratuitos” que por su iniciativa se han establecido en la ciudad.

In short: The Mexican Society of Sanitary and Moral Prophylaxis of the Venereal Diseases is an institution of private character, the generous mission of which is to enlighten and impress upon the mind of Mexican people in general, young men and girls in particular, the real meaning of the sexual life and the dangers coming from venereal infections, and to cure those suffering from the above-mentioned diseases in the free dispensaries that have been established through the efforts and labor of the members of the Society.

ALUMNOS REPROBADOS EN LAS ESCUELAS ELEMENTALES DEL DISTRITO FEDERAL

POR

MANUEL VELÁSQUEZ ANDRADE

I.

Queremos en este ensayo de investigación psicológica exponer ante la diversidad de criterios que sobre bondad de sistemas de educación primaria reina en nuestros medios científico y pedagógico, los hechos que a continuación damos a conocer y que son dignos de estudio y de que fijen en ellos su atención los maestros y las autoridades escolares.

Año por año, en los documentos oficiales de los reconocimientos finales, que deciden el ascenso de los alumnos, aparece un enorme número de niños *reprobados* señalándose como causas directas de este fracaso, muchas y de varias categorías.

Existe en varios medios científicos desde hace mucho tiempo, un rumor sordo e insistente acerca del "fracaso" en que se encuentra sumida la educación primaria del Distrito Federal dando por causas eficientes el mal sistema de educación que se ha implantado y los pésimos programas y métodos puestos en práctica para realizar dicho sistema.

Deseos como somos, de los estudios de observación e investigación y haciendo abstracción de las ideas pedagógicas que profesamos, nos propusimos buscar las causas efectivas a que se debería el hecho que acabamos de señalar, es decir, el gran número de reprobados que acusan los documentos escolares y si la opinión pública, basada en los anteriores resultados, tiene o no fundamentos para condenar y hasta desterrar los actuales programas de estudios y métodos en uso.

II.

Los niños reprobados no sólo reportan inconvenientes a los padres si no al Estado mismo.

Un niño reprobado es a semejanza de una planta cuya cosecha se pierde en un año y así como el agricultor busca la causa de esta pérdida y procura si da con ella, prevenirla y evitarla para el año próximo así las autoridades escolares debieran proceder y buscar entre las muchas causas, cuáles fueron las que más directamente frustraron las enseñanzas en los niños que resultaron reprobados.

Una buena cosecha no depende solamente de la *semilla* (conocimientos) y del procedimiento de sembrar (métodos, procedimientos, &) si

no de la naturaleza y calidad de la tierra y del medio físico ambiente (niño, medio social).

Es un hecho que nadie desconoce que el estado intelectual del educando es un factor de considerable importancia en el aprovechamiento de la materia o materias que se trata de hacerle aprender.

Se condenan muy frecuentemente los sistemas, programas y métodos, se declaran malos a los maestros, pero no se dice nada del *niño* o del *alumno* porque el conocimiento físico y síquico de su naturaleza es difícil y no se intenta hacerlo.

III.

Aprovechándonos de la circunstancia de tener a nuestro alcance algunos medios y datos para emprender el estudio de los niños reprobados, procedimos en esta forma.

Al terminar los reconocimientos o exámenes finales, los directores de las escuelas han acostumbrado rendir a la Dirección General de Educación Primaria los datos siguientes:

- I. Número de alumnos examinados.
- II. Número de alumnos reprobados y
- III. Número de alumnos aprobados.

En una columna especial de las listas de los reconocimientos los maestros acostumbran indicar las causas que en su concepto determinaron la reprobación de sus alumnos y entre las que se cuentan: *faltas de asistencia, desaplicados, perezosos, incapacidad mental, inatentos, &* pero lo que fundamentalmente ha determinado hasta hoy la *reprobación* es que los niños estén deficientes en *lenguaje y aritmética* de tal modo que el reconocimiento del alumno se suspende en estas asignaturas si desde luego ve el Jurado que ignora estas materias.

Este modo de proceder puede tacharse de imperfecto y defectuoso, pero en los años 10. y 20. por ahora, no se puede obrar de otra manera, pues si el examinado no sabe leer o ejecutar las operaciones del cálculo aritmético según debiera en estos grados, encontrará después serias e infranqueables dificultades en los años superiores.

Haremos observar sin embargo, que la causa directa y absoluta de la reprobación en estos dos casos, no es en nuestro concepto, debida al empleo de malos métodos en la enseñanza de la lectura, escritura y evaluaciones de magnitudes o a la ineptitud de los maestros como lógicamente pudiera inferirse, si no que la causa eficiente bien puede radicar en el estado *físico y funcional de la inteligencia* del niño o deberse a las *influencias sociales o económicas ambientales*.

Como los procesos cerebrales, leer, escribir y calcular son los más difíciles es donde el alumno muestra inmediata y visiblemente su deficiente o ninguna capacidad mental.

Queriendo descubrir, si era posible, otra categoría de causas a que obedeciera el número tan considerable de niños reprobados, diez días antes de que terminasen los reconocimientos en las escuelas primarias del Distrito Federal se mandó a los directores y directoras un esqueleto impreso que deberían llenar con varios datos y entre los cuales figuraban los relativos a los reprobados, haciendo la siguiente pregunta:

“XI. *¿Cuántos Alumnos Fueron Reprobados por las Siguietes Causas:*

- I. Por falta de asistencia (parcial a la escuela o a las clases)
- II. Por incapacidad mental.
- III. Por enfermedad.
- IV. Por defectos físicos: tartamudez, sordera, miopía, &.
- V. Por deficiencia en lengua nacional.
- VI. Por deficiencia en evaluación de magnitudes y
- VII. Por otras causas no especificadas.....?

No dejamos de comprender que este interrogatorio era susceptible de producir confusiones, como de hecho las pudimos comprobar posteriormente; que no se especificaban si no muy pocas causas; que hubiera resultado un estudio de mayor seriedad científica y de alcances pedagógicos trascendentales si se hubiera determinado al mismo tiempo la *edad y año escolar de los reprobados*, tarea bien fácil, pero nos detuvo el escrúpulo de ocasionar mayor trabajo a los maestros y de no haberles dado previamente instrucciones e indicaciones sobre lo que debía entenderse realmente por niños *anormales o retrasados*; apesar de estas deficiencias que somos los primeros en reconocer, he aquí *concentrados, examinados y clasificados* los datos de esta investigación y que presentamos en el cuadro anexo.

IV

En el cuadro anterior puede verse que 2457 niños debieron su reprobación a la falta de asistencia, siendo ésta, según el decir de los maestros, *continuadas y frecuentes ausencias* a la escuela de uno o varios días. Y la causa, preguntamos, ¿cuál puede ser? Muchos maestros señalan la proeza de las familias, otros, la apatía de los padres y un gran número hace incapie en la falta de una vigilancia policiaca que persiga la vagancia infantil por calles y plazas.

La pobreza de los padres se traduce por la falta de recursos para alimentar y aún para vestir a sus niños. Este hecho no es nuevo ni menos constituye fenómeno exclusivo a nuestro medio social, se observa aún en los países ricos como son Francia, Alemania e Inglaterra.

Para remediar hasta donde es posible los males señalados, el Gobierno creó en 1911 los "*Comedores Escolares*" y periódicamente la Dirección General de Educación Primaria ha venido repartiendo ropa a los necesitados. ¿Se ha conseguido con esto que los niños dejen de faltar a sus escuelas? No lo sabemos. Sólo un estudio estadístico y la investigación de la influencia que ya se haya hecho patente de los "*Comedores Escolares*" sobre este particular podría darnos luces, mas tal trabajo no existe.

La apatía de los padres puede corregirse aplicándoles las penas legales anexas al precepto de la instrucción obligatoria, pero en este proceder vemos una gran injusticia y es esta: el gobierno puede no hacer obligatoria la educación elemental por la poderosa y sola razón de que no cuenta con los elementos materiales ni docentes para cumplir con dicha Ley y se ve en el caso de tolerar a sabiendas que existen muchos niños que no concurren a las escuelas. Ahora bien, la aplicación de las multas sólo recaería en los que cumplen con mandar sus hijos a la escuela quedando sin molestias los que abiertamente no acatan el precepto legal de la enseñanza obligatoria.

Perseguir la vagancia callejera nos parece más sencillo, sería cuestión de disposiciones económicas de orden gubernativo.

A los remedios antes señalados podemos agregar este otro: la implantación en nuestro medio de las *horas corridas*.

En materia de *horarios continuos o discontinuos* en nuestro ambiente pedagógico demasiado reducido, no puede fallarse con fundamento científico; toda opinión favorable o desfavorable a uno u otro, es sencillamente una apreciación personal más o menos justificada; siendo así, nos creemos autorizados para emitir la nuestra basándola en las condiciones económicas de los niños pobres y en la necesidad de *prepararlos y lanzarlos* a la lucha por la vida en el menor tiempo posible y en condiciones de obtener éxito.

La larga preparación escolar puede ser excelente desde un punto de vista doctrinario o como una consecuencia de investigaciones psicológicas de laboratorio, pero desde el punto de vista económico y social en nuestro país, es inaceptable.

La prolongación de la existencia escolar en los países pobres se traduce por una gran *deserción* de la escuela antes de tiempo, aquí en la Capital no obstante de no llevarse sistemáticamente una estadística rigurosa sobre este fenómeno, es un hecho de observación que de 80,000 que emprenden su instrucción llegan al 40. año elemental 5.000 más o menos.

Se nos objetará diciéndonos que no es la pobreza lo único que determina tan grande deserción; ciertamente, pero entra en gran escala, por la necesidad en que se ven las familias pobres de dedicar a sus hijos al aprendizaje de un oficio o labor antes de terminar el tiempo que el precepto legal obliga.

Los *horarios continuos* facilitan y dan oportunidad para que los niños por las tardes trabajen o aprendan un oficio.

V.

El dato que aparece en seguida en el cuadro es una grave y seria revelación de un hecho hasta ahora no debidamente apreciado en toda su significación *educativa, social y nacional*.

Para declarar *incapaces mentalmente* a sus alumnos los maestros no tuvieron más fundamento que su observación ejercida durante el curso del año con esos niños los que no revelaron aptitudes para asimilarse los conocimientos que se hizo por transmitirles.

Esta observación por más exacta y bien fundada que se le considere no puede tomarse como un *diagnóstico definitivo* y he aquí nuestras razones.

De tiempo atrás viene padeciendo nuestro sistema de educación de una crónica insuficiencia sobre *clasificación sico-pedagógica* lo que hace que los alumnos no estén debidamente en el año o grupo que corresponde a su desarrollo físico e intelectual.

El inmediato y desastroso resultado de este hecho es que los niños no reciben la instrucción apropiada ni en calidad ni en cantidad que correspondería a su poder de adquisición mental y tal desacuerdo de las materias motivo de aprendizaje y los métodos y procedimientos de enseñarlas con el estado intelectual del alumno se traduce por la *reprobación anual* y reprobación que muchos maestros afirman obedece a la incapacidad mental del educando.

La condición que los maestros llaman *incapacidad mental* especialmente en el 10. y 20.º años ¿no será más bien *falta de desarrollo intelectual*, dos cosas bien distintas por cierto? Esta creencia nuestra se basa en el hecho de que los padres inscriben a los niños siendo aún muy pequeños ocultando a los maestros su verdadera edad y esa falta de desarrollo intelectual hace que los niños no puedan con el programa designado para su año.

Lo numeroso de los años es causa de que los niños no puedan aprovechar las lecciones ni los maestros puedan ejercer por igual su vigilancia con todos los alumnos de lo que resulta que unos sí trabajan y el resto no hace nada o si hace es muy poco.

El factor *mujer* en los niños de 30. y 40. años ¿no será un elemento

desfavorable para el aprovechamiento de los alumnos? Esta interrogación no tiende a deprimir ni calificar de mala la tarea abnegada y dura de la mujer en la instrucción, pero tratándose de los niños la *influencia del sexo* si puede considerarse importante en el resultado final de los trabajos escolares.

VI.

El contingente de los alumnos que por defectos físicos han sido reprobados es bien pequeño aunque no por esto es menos digno de atenderse por razones que se comprenden desde luego.

Los reprobados por falta de *atención, pereza, mal carácter, desaplicados*, &c. de ser ciertas estas las causas son tipos de niños perfectamente *anormales* y por consecuencia exigirían en los años superiores, de continuar en la escuela, una enseñanza adecuada y la adopción por parte de los maestros de métodos especiales.

Los alumnos reprobados por falta de *desarrollo intelectual* ameritarían que se les sujetase a pruebas psicológicas definitivas y no creemos que los maestros lo hayan hecho, por lo tanto este dato pudiera muy bien rubricarse con otro nombre que correspondiera exactamente al verdadero estado mental del niño.

Para impedir la inscripción en las escuelas oficiales de niños menores de 6 años se han dictado disposiciones Ministeriales oportunas, pero los maestros no pondrán sustraerse al engaño de los padres entre tanto no se exija a éstos la boleta del Registro Civil del solicitante al pedir ser inscrito.

Los datos que siguiendo el orden numérico aparecen los juzgamos de menor importancia por ser su remedio fácil.

En el dato número 18 entran todos aquellos alumnos a quienes los maestros no supieron o no quisieron clasificar predominando los niños cuyas causas son: flojera, inatención, indisciplina, faltistas, &c.

Este contingente de cualquier modo que sea revela un hecho desfavorable ya sea tratándose de los niños o de la imposibilidad de aplicar por igual los actuales métodos de enseñanza.

En resumen:

1. El fin que nos hemos propuesto y que perseguimos con este humilde ensayo es llamar poderosamente la atención de las Autoridades escolares así como la de los maestros acerca de los anteriores hechos que por considerarlos triviales tal vez han pasado sin merecer estudio.

2. Urge que una Comisión compuesta de: un médico, un psicólogo y un maestro determinen cada año:

- I. La edad fisiológica o intelectual de los reprobados
- II. La capacidad o peculiaridades mentales y
- III. La educación pedagógica adecuada.

3. Instituir reconocimientos formales cada cinco meses con el objeto de que si los niños que se consideran incapaces mentalmente, mal preparados, pequeños, & efectivamente lo son no continúen perdiendo todo el año y

4. Estúdiase la conveniencia de aminorar y acortar los programas y adaptarlos a la capacidad mental y categoría social de los educandos.

Summary.

The main purpose in writing this work has been:

I. To call the attention of teachers and school authorities to the great number of *non-promoted* children resulting every year in our schools, a fact which has been considered up to the present time a valueless thing.

2. To suggest to the Minister of Public Education the nomination of a mixed Committee of one school doctor, one psychologist and one teacher to investigate every year the following:

- I. The physiological and mental age of *non-promoted* children;
- II. Their mental endowments and brain peculiarities;
- III. To point out their fitted training both intellectual and physical.

3. To make compulsory examinations every five months to discover the laggards, abnormal and poorly trained children in order to stop the customary methods or change them by others suited to the children.

4. To suggest the study of the advantage of shortening the present school curriculum and try to adapt it to the mental capacities and social condition of the child's life.

ESCUELAS ELEMENTALES DEL DISTRITO FEDERAL.

ALUMNOS REPROBADOS.

Año de 1912.

CAUSAS	H.	M.	Total	% c/., rel. existencia.	% c/., a los (1) examinados (2).
1. Por Falta de Asistencia.	993.	1464.	2457.	8.5	...
2. Por Incapacidad Mental	559.	504.	1063.	3.4	3.9
3. Por Enfermedad.....	141.	202.	343.	1.2	1.3
4. Por Defectos Físicos:					
I. Tartamudez.....	14.	14.	28.	...	...
II. Sordera.....	1.	3.	4.	...	...
III. Miopía.....	10.	7.	17.	...	...
5. Falta de Atención.....	20.	83.	103.	0.35	0.4
6. Pereza.....	17.	12.	29.	...	...
7. Mal Carácter.....	16.	93.	109.	0.4	0.4
8. Desaplicados.....	103.	83.	166.	0.6	0.6
9. Desarrollo Intelectual Retrasado.....	2.	37.	39.	...	...
10. Inacripción Tardía.....	86.	40.	126.	0.5	0.5
11. Menores de 6 Años.....	74.	46.	120.	0.4	0.5
12. Por Llegar Tarde a las Clases.....	56.	71.	127.	0.5	0.5
13. Mala Preparación en años Anteriores.....	2.	6.	8.	...	...
14. Por no Haber Terminado el Programa.....	...	5.	5.	...	...
15. Por Falta de Profesor....	47.	51.	98.	0.3	0.3

(1). 28.798. (Representa la existencia de alumnos en las escuelas elementales del D. F.)

(2). 26.981. (Número de alumnos examinados en las escuelas elementales del D. F.)

ESCUELAS ELEMENTALES DEL DISTRITO FEDERAL.

ALUMNOS REPROBADOS

Año de 1912.

CAUSAS	H.	M.	Total.	% c/. rel. existencia.	% c/. a los (1) examinados (2).
16. Por Deficiencia en Lengua Nacional.....	854.	903.	1757.	...	...
17. Por Deficiencia en Evaluación de Magnitudes..	444.	605.	1049.	...	...
18. Causas no Especificadas.	259.	461.	720.	2.5	3.

(1). 28.798. (Representa la existencia de alumnos en las escuelas elementales del D. F.)

(2). 26.981. (Número de alumnos examinados en las escuelas elementales del D. F.)

(Anexo 2)

ESCUELAS ELEMENTALES DEL DISTRITO FEDERAL.

ALUMNOS PROPIAMENTE ANORMALES.

Año de 1912.

CAUSAS	H.	M.	Total.	% con. relac. a existencia.	% con relac. a los examina.
1. Incapacidad Mental.....	559.	504.	1063.	3.6	4.
2. Falta de Atención	20.	83.	103.	0.35	0.4
3. Pereza	17.	12.	29.	...	...
4. Mal Carácter	16.	93.	109.	0.4	0.4
5. Desaplicados.....	103.	83.	166.	0.6	0.6
6. Desarrollo Intelectual Retrasado.....	2.	37.	39.	...	...
7. Causas no Especificadas..	259.	461.	720.	2.5	2.6
Que hacen un total de: 2229	956.	1273.	2229.	8.	8.3

1. Existencia: 28.798.

2. Examinados: 26.981.

EDUCATION OF SCHOOL CHILDREN IN THE PRINCIPLES OF HYGIENE

BY

LEE K. FRANKEL

No attempt will be made in this paper to present the subject of the education of school children in the principles of hygiene from a general standpoint. Following the suggestions of the Secretary of the Congress, the consideration of this topic will be limited to a presentation of the work which has been done by the Metropolitan Life Insurance Company for school children along educational lines.

One may well wonder what interest an insurance company may have in the education of school children. To understand this fact thoroughly it should be stated here that the Metropolitan Life Insurance Company, in addition to carrying on the business of so-called ordinary insurance, has for many years been actively engaged in transacting industrial insurance. Its policyholders in this department, numbering to-day approximately nine million, are composed of men and women and of children from one year of age upward. Roughly speaking, about two-thirds of these industrial policyholders are adults and one-third are children under sixteen years of age. Approximately two and one-half million of its policyholders are children of school age, that is, between the ages of six and sixteen years.

Various reasons may be advanced which would prompt an insurance company to entertain activities for the improvement of the general welfare of the children whom it insured. From the purely business standpoint it may be urged that any campaign which teaches children the principles of hygiene would have a tendency to make children better safeguard their health. Such a campaign would necessarily result in less frequent illness among children and perhaps also in a lower mortality. Both population and insurance statistics show quite clearly that there has been a marked reduction in mortality among children in the past few decades. This reduction is even more pronounced, as you know, among infants. Even among children of older ages, it appears that the improvement in general conditions has had its effect in lowering child death rates.

The motive which was assigned above for the activity of the insurance companies is, however, a minor one. There are other and better reasons. The most important is the realization that insurance to-day is no longer recognized as a purely commercial enterprise. Nothing

better indicates this fact than the term which is applied to the various forms of governmental insurance in Europe, namely, social insurance. Twenty-five years ago, when the first International Congress on this subject was held in Paris, the association at that time, not fully realizing the possibilities which lay in the future, was called the International Congress on Industrial Accidents. The remarkable spread of all forms of workmen's insurance since that time and the recognition that insurance was simply a phase of social activity has brought about a change in the name of this International Association, so that to-day it is known as the International Congress on Social Insurance.

It is only natural that the social significance of insurance should have been recognized by private insurance companies in the United States. Fundamentally, any insurance organization is not more than a piece of machinery which gives individuals the opportunity to protect themselves against the hazards of life. In the past, this machinery has been applied largely to compensating or indemnifying individual members of such an insurance organization for the results of these hazards. The modern tendency is in the direction of preventing or minimizing these hazards, if this is at all possible. That this is of benefit to the insurance company cannot be gainsaid. It is even more obvious that the preventive measures are of the greatest value to policyholders in the resulting reduction of sickness, accident, invalidity and premature death. Under any theory of conservation, it is desirable that the working life of the individual units in a community should be maintained to the furthest limit. The time to begin the education of citizens in prevention is not when they have reached maturity, but during the impressionable ages of school life.

Various means of educating school children in the principles of hygiene at once suggest themselves. The simplest naturally would be the method of the school, namely, through the personal instruction of the teacher and the use of the text book. Unfortunately, the average teacher of school children to-day has herself not had sufficient training to impart much knowledge to her charges. It is highly desirable that in our high schools and normal schools more stress should be laid upon the subject of hygiene that we may soon have sufficient instructors qualified to give courses in hygiene to their classes.

Another difficulty has been the comparative lack of good text books, etc., dealing with the subject of hygiene. It is true that many writers have attempted to prepare literature for this purpose but in the main, their attempts have been unsatisfactory. Most of the texts are not adapted to the child of tender years; neither the phraseology nor the manner of approach is of the kind that can readily be comprehended by children. But little attempt has been made to apply the daily

activities of children as object lessons in educating them in hygiene. To the competent and sympathetic teacher there is a vast field of opportunity in the things that happen daily in the school room, in the street, in the home, and in the daily life of the child to enable her to give instruction to her class in the rudiments of hygiene.

Largely owing to this lack of any concrete and definite scheme of instruction in the school, the Metropolitan Life Insurance Company has attempted to reach the child in the home. To this end, it publishes a magazine which is distributed at periodical intervals and reaches the homes of practically all its industrial policyholders. There are various fine possibilities in the distribution of a magazine of this kind by an insurance company. Every policyholder is distinctly aware of the fact that he pays premiums; the receipt, therefore, of a publication from his company is accepted by him as an additional return for the money which he has invested. It is common knowledge among advertisers that magazines which are distributed gratuitously or in any way excepting through paid subscriptions have not great advertising value for the reason that they are commonly unread. We have every reason to believe that the magazine which we distribute is eagerly sought for by our policyholders and that its contents are read by all members of the family. It has been our particular aim in this magazine to adapt it to the educational attainments of our readers. In order to meet the various racial strata the magazine is published in ten languages. Articles contained in the magazine are purposely short and written in a popular style. The illustrations both on the cover pages and in the text have been selected with a view to their value as object lessons. Frequently the instruction in hygiene which we wish to impart has been conveyed in the shape of a story.

May I burden you for a few moments with a list of some of the articles which we have published in order that I may convey to you our manner of approach:

A short article on "School Children and Their Needs," gave examples of meals best adapted for children.

"Johnnie's Shoes" told in story form the disobedience of a boy in not following his mother's suggestion to change his wet shoes. The resulting cold and subsequent pneumonia were pointed to as a warning against such disobedience.

"Some Books to Buy for the Children for Christmas" gave a carefully selected list of juvenile publications.

"Fathers and Sons" was an appeal to parents to ascertain what was in the hearts and minds of their children, and to try and enter into their lives more thoroughly.

"Our Glorious Fourth" given in story form, advocated a safe and sane Fourth. In connection with this story the company offered cash prizes for the best description of a safe and sane Fourth, written by a boy or girl who was a policyholder of the company.

"How Johnnie Spent His Summer" was a story describing a boy's activities developing a vegetable garden.

"Ten Commandments of Spotless Town" gave instructions to the children for the preservation of the beauty of the cities and towns in which they live. Here, too, cash prizes were offered for actual work in the above direction done by boys and girls.

Many other articles on similar topics relating to health have appeared from time to time.

In addition to this magazine the company has published special brochures and pamphlets directed to specific matters in connection with the health of children. One pamphlet entitled "Teeth, Tonsils and Adenoids" has had a circulation of nearly two million copies and the demand for it still continues. This pamphlet has been distributed in the homes of policyholders and lays particular stress on the care of children's teeth and the necessity for the removal of adenoids and tonsils. The value of this pamphlet is indicated by the fact that parents have written us that until the booklet came into their hands they were unaware of the troubles from which their children might be suffering. Subsequent visits to their physicians brought out the fact that in many instances adenoids were the cause of the difficulty and these were then removed.

Another pamphlet which the company has issued is one entitled "The Child." Primarily, it is intended to teach the mother how to care for her infant. Subsequent chapters, however, deal with the care of older children, particularly those of school age. The book describes in simple terms the best and most wholesome foods for children and the illnesses to which children are liable. It goes without saying that the booklet lays particular stress upon the necessity of having competent medical advice in case of illness.

We believe, however, that the most important work which we have done in the attempt to educate school children in hygiene, is the Health and Happiness League. Admission to this league is dependent upon the signing of a pledge by the child, who is a policyholder of the company. When this pledge is received by us a certificate of membership is awarded and a league button presented to the member. The pledge indicates the purposes of the League. The child who subscribes to the pledge among other things promises:

1. To do all in his power to preserve his own bodily health.
2. To destroy every house fly he possibly can.
3. Not to throw rubbish in the streets.
4. Not to spit upon the public streets or in public places.
5. Not to permit any rude or offensive word to pass his mouth, even when provoked, and
6. To keep himself clean and to try to do every kind act that he can.

Only children who have become members of the Health and Happiness League are permitted to enter in contests for prizes which we award. These prizes, as stated above are given for essays written by the children. It has been very gratifying to us to learn that both the League and the subjects assigned for prize essays have been considered of sufficient value by school teachers throughout the United States to warrant them in using the competitions for class instruction. Instead of regular class composition and essay work, teachers have substituted our prize essays and permitted their children to write these essays as part of their class work. We have attempted as far as possible to combine the theoretical with the practical. The essays, as a rule, have been descriptive of something actually done by children along the lines of hygiene. I have spoken above of the prizes for essays describing vegetable gardens grown and cared for by children, the best plans for a safe and sane Fourth, and what each member can do to assist in the city cleaning campaign. In addition to these, we have offered prizes for essays on "How to Prevent Fire," on "Outdoor Sports," "Flower Growing," "The Right Attitude in Home Life," "Good and Bad Milk," "How to Avoid Accidents," etc. The essays presented by the children in many instances show considerable knowledge and much interest in the tasks assigned to them.

During the past summer we have instituted a rather novel method of bringing the children together in various points throughout the United States. Outings and pageants have been arranged to which the children are invited. Sports of various kinds are arranged for their entertainment and amusement and prizes are offered for the winners. In these contents only the members of the Health and Happiness League are permitted to participate. Our idea in limiting these contests to members of the League is to inculcate in the minds of the boys and girls the idea that membership is something to be desired and that the pledges which the children are required to sign should play an important part in their lives.

We believe that the possibilities of the Health and Happiness League are many. As yet the organization has not crystallized sufficiently

to bring the boys and girls together in groups in their respective communities. This we believe to be the work of the future and we are at present engaged in mapping out plans to bring about such an organization. To keep the interest of our members it will be necessary to give them a definite programme of work not as individuals necessarily, but as groups. We hope through the medium of the League to arouse their interest in civic matters pertaining to health and cleanliness and to develop a spirit of mutual helpfulness among the members which shall benefit not only themselves but their parents and others as well. We believe it possible to make an appeal to the average boy and girl which will guide them in directions of usefulness, cleanliness of body and thought and in service to others. The fact that this is done by an insurance company in which the members are policyholders gives at once a point of contact which it is difficult to find in other ways. Agents of the company visit the homes of these children practically every week and in this way we have the machinery to get into ready touch with the children and to bring to their notice and attention things we desire them to do.

While the bearing on the subject of this paper is somewhat indirect, yet mention should be made here of the visiting nurse service which we extend to our industrial policyholders. We have found in our experience that a large percentage of the patients whom the nurses care for are children of school age. I need not say here that the visiting nurse service as it has developed in the United States does more than merely curative work. Primarily, the efforts and activities of the nurse are educational. In the care which she gives to the children and to their parents, the opportunity is given to her to teach the principles of sanitation and hygiene. Many valuable lessons would not be learned were it not for the presence of the nurse, and the instruction which she gives.

In the time allotted to me it has not been possible to do more than touch upon the various activities in which we are engaged to educate school children in hygiene. I hope, however, that enough has been indicated to you to make you realize that the campaign of education in which we are engaged should, in due time, produce distinct results. If, as a result of our efforts, we can feel that we have been instrumental in making boys and girls grow up to be better citizens, better fitted to take their places in community life, better equipped physically and mentally to engage in the business or professional pursuits which they will eventually take up, we shall rejoice in the thought that our campaign has not been in vain.

SESSION ELEVEN

Room B.

Wednesday, August 27th, 2:00 P.M.

INSTRUCTION IN HYGIENE (Part Three)

EDGAR A. HINES, M.D., *Chairman*

REV. JOHN W. ROSS, Buffalo, N. Y., *Vice-Chairman*

Program of Session Eleven

EDGAR A. HINES, M.D., Secretary South Carolina Medical Association, Member of State Board of Health. "School Hygiene Simplified,—The Reward System."

E. A. PETERSON, A.M., M.D., Director of Medical Inspection and Physical Education, Cleveland, Ohio. "Authoritative Procedure versus Persuasion or Education in Dealing With Parents and Pupils."

LILLIAN M. TOWNE, First Assistant Director Practice and Training, Boston, Mass. "The Teaching of Hygiene."

RICHARD HENRY WATKINS, Superintendent of City Schools, Laurel, Miss. "The Teaching of Hygiene and Sanitation in Negro Schools."

W. F. UNIA STEYN PARVÉ, M.D., Medical School Inspector, Deventer, Netherlands. "Needle Work Lessons in the Ordinary School Time."

MARCELINO WEISS, M.D., Secretary Committee on Text Books and Hygiene, Dental Hygiene Section, and

OSCAR UGARTE, Secretary Press and Propaganda Section on Hygienic Text Books, Havana, Cuba. "Utilidad de un 'Libro Primario de Lectura' Aplicado a la Higiene General y en Especial a la Higiene Dental." Joint Paper. Read by Dr. Weiss.

FRED M. GREGG, A.M., M.S., Professor of Physiological Science and Educational Theory, State Normal School, Peru, Nebraska. "Teaching Hygiene as Nature Study."

GEORGE E. SMITH, M.D., Department of Public Instruction, Buffalo, N. Y. "Questions of Hygiene Peculiar to Evening Schools."

JOHN R. MOHLER, V.M.D., A.M., Chief of Pathological Division Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C. "Instruction Concerning the Inspection of Food Animals and Animal Foods."

Papers Presented in Absentia in Session Eleven

(Read by Title)

G. W. HUNTER, A.B., A.M., Head of Department of Biology, DeWitt Clinton High School, New York City. "An Experiment in Student Control of School Sanitation and Hygiene."

MACLEOD YEARSLEY, M.D., Cavendish Square, London, England. "Progress in Deaf Educational Work Since the Third Congress."

OSCAR UGARTE (see page 223). "Por la Higiene Escolar y por Natura."

SCHOOL HYGIENE SIMPLIFIED—THE REWARD SYSTEM

BY

E. A. HINES

One of the greatest obstacles to the progress of hygiene in our southern schools, at least, has been the lack of definite knowledge of the subject on the part of all those who have been responsible for the school child's welfare. The medical man in every community for more than sixty years has been especially charged with the duty of caring for the health of the school child, by his code of ethics, but he himself has had hitherto very poor training on this subject. The training of the teacher has been likewise fragmentary, superficial and unsatisfactory. The parents in too many instances have not only been ignorant of the fundamental principles of hygiene but have considered outside advice or interference an invasion of their rights as American citizens. The whole matter of hygiene and incidentally preventive medicine has occupied a subordinate position in the curricula of not only our public schools and colleges but of the private institutions as well.

I have for many years labored to the end that hygiene in its broadest sense should be given as significant a place in the plan of the child's education as any other department of knowledge. To further this aim stands first enlightenment of the entire community atmosphere in which the pupil receives his training.

The methods to be outlined in this paper I do not claim will solve easily and simply all of the complicated problems involved in the hygiene of the school child. I only wish to suggest a plan whereby the subject may receive the attention it deserves in every school in the land, a plan that should be feasible in even the remotest rural school.

While serving as health officer in the town of Seneca, S. C., a town of 1,313 population, prior to 1904 I was often obliged to close the schools on account of transmissible diseases. It occurred to me that if in some manner a premium could successfully be placed upon simple cleanliness and observance of the basic principles of hygienic living, the health of the student body would be materially promoted. I therefore introduced the reward system—an idea which through all the ages has been resorted to for the purpose of enlisting the interests of the child whether in or out of school.

In 1904 I offered a gold medal to be given each year to the child who

demonstrated to the satisfaction of the entire faculty that he carefully practiced the principles of cleanliness in person and apparel, and in addition made good marks in general scholarship. This was the first gold medal ever offered in the school and with one exception the only one ever offered in the county. Such an innovation naturally attracted the attention of not only the pupils but of the patrons and indeed the community at large.

Hippocrates said, "Experience is fallacious and judgment difficult," but I am inclined, as time passes, to believe strongly in one of the gems from Ben Hur, viz, "Without doubt all past experience is of infinite value to the individual."

The coming session will complete a decade in which this plan has been pursued and I deem this sufficient time in which to test its workings. I have endeavored to keep in close touch with my colleagues of the Medical profession by reporting progress to the regularly organized societies at frequent intervals. A brief report was made to the North Carolina Medical Society in 1906, a rather comprehensive paper was presented to the South Carolina Medical Association in 1908 and further progress reported again in 1910. A report was made also to the South Carolina Dental Association in 1910. Reports have been made before many allied organizations interested in the school child's welfare and these have been further emphasized and disseminated by the press of the southern states.

I trust, therefore, that in offering for your consideration this modest plan for the teaching of hygiene in our schools, I may be pardoned for taking up your valuable time in explaining a method really so old in its essentials but I believe it to be comparatively untried in its application to this particular sphere of school work.

I have found the idea to develop in three directions: First, in its applicability; second, flexibility; third, as a popular disseminator of hygienic and sanitary knowledge.

I cannot conceive of a school in which the plan may not be resorted to in some way. I especially recommend it for adoption in the schools of the rural districts or small villages and towns and in the lower grades, even in the primary classes, just where the foundation for an education is laid, and just where the greatest number of defects are found and likewise the most serious inroads of transmissible diseases. It is not utopian to assert that it may be found applicable to the college or university, to encourage not only the practice of hygienic principles on the part of the student but to encourage even the research worker in the alluring fields of hygiene and preventive medicine.

The reward system may be utilized in every class in the school and in a great variety of ways. One of the most important phases of per-

sonal hygiene is the matter of oral hygiene. In the primary grades, a conscientious teacher may easily inspect the hands, for instance, every day and grade a pupil on cleanliness and this is worth while, for the hands alone carry a multitude of pathogenic germs. Again, actual text book studies and recitations on hygiene in the class room may be energized and made much more effective. For advancing the knowledge of hygiene and sanitation in the school and community this idea finds its most promising field of usefulness.

Permit me to give you briefly some of the benefits actually demonstrated in the Seneca Graded and High School:

1. The entire student body, numbering about 300 pupils, takes a pride in personal hygiene and school sanitation.
2. Transmissible diseases have been reduced as shown by the records of the health officer of the town.
3. Sanitation has been promoted as follows:

Sanitary closets have been constructed according to the specifications of the Rockefeller Hookworm Commission, thus preventing soil pollution by the school and as an object lesson to the community. A sanitary bubble drinking fountain, supplied by a deep bored well has been installed, there being no public water supply or sewerage system in the town.

Physical culture has received a decided impetus as shown by a markedly increased interest in out-door athletics and by the equipment of a gymnasium for both boys and girls. There are probably very few public schools in the southern states maintaining a gymnasium for girls and we know of no other in South Carolina. On September 23, 1909, a complete system of medical inspection was inaugurated by an able staff, consisting of two general practitioners, one eye, ear, nose and throat specialist, and three dental surgeons. This was the first attempt in the state and one of the earliest in the South, being preceded only a few months by the large cities of New Orleans and Atlanta. In an incredibly short time nearly all the large cities and towns in South Carolina became interested in the subject and followed the lead of the Seneca School. As a means of awakening genuine interest in hygiene and sanitation in the community at large, the plan outlined stands preëminent, I have found. For instance, we have at our commencements invited brilliant speakers to present to the successful student the Personal Hygiene Medal and at the same time impress upon the audience the great principles involved in awarding the same. When the cornerstone of the new building was laid in 1909, before perhaps one of the most representative audiences ever assembled in the county,

the President of the South Carolina Teachers' Association, in a most eloquent address presented this medal. All these occasions have been seized upon by the daily and weekly press as important messages to the larger world of readers and thus the sphere of influence and knowledge has spread in ever widening circles.

Following this campaign of education, the people became so enthused that a mandatory medical inspection of schools law of state-wide scope was demanded and passed by the legislature of 1912. This bill was vetoed by the Governor. Undaunted, the friends of the measure re-introduced the bill which was drafted with unusual care, and it has now passed the second reading in the Senate. If successfully enacted it should stand as a model, as it provides for medical supervision of every pupil in the state from the kindergarten to the university.

So much for the public instruction feature of the ideas set forth. I have not touched upon the fact that good scholarship has always been one of the requirements of the system under consideration. It would be entirely germane to say that under this head mental hygiene should find a place and an extremely important niche it is destined to fill, in view of our rapidly advancing knowledge of psychology as found in the school room.

To bring this paper to a close with some practical deductions and illustrations so that you really may carry away not alone a word picture, I wish just here to present one of the recipients of the Personal Hygiene Medal. This young lady won this medal six years ago when she was in the fifth grade. She led her class in scholarship through every grade, including the High School. She is now in the freshman class of one of the largest colleges for women in this country. The class numbers 222 and she continues there her leadership and has had all the while almost perfect health. The boys and girls who have been medalists thus far have delighted to wear their honors so that the world may see and know that they are apostles of the doctrine of good health, and this pardonable pride is no inconsiderable factor in moulding public sentiment favorably.

In the South to-day some of the most tremendous problems of preventive medicine are being solved, and to hasten their solution we look not in vain I believe to our schools. There are two million cases of hookworm disease in the South, and there are thousands of cases of pellagra. Definite knowledge of both these diseases should be taught in the schools.

A high authority recently affirmed that the recognition and cure of hookworm in our more southern latitudes the most notable fact in the recent history of the region. Only the Civil War, with its train of disasters ranks with it in importance. The industrial and agricultural

awakening, great and promising as it is, has from the first been involved in this widespread disease and still conditioned by it. For only about ten years have physicians recognized this disease and in many communities fifty to eighty per cent. of the people are infected. There are various names for the disease, and it is sometimes, with us, called lazy man's disease. If this were true probably a few cases might be found as far north as this city. The scientific name is *Necator Americanus* or American Murderer. The worms are not over an inch in length nor thicker than an ordinary hat pin. These worms enter the human body through the skin of the bare foot usually and from infected soil. They attach themselves to the lining of the alimentary tract and by hundreds and thousands sap the life blood and energy, as you can easily imagine, from the poor victim. He becomes sallow, bloated and stunted in growth, if a child. The energy, intellect and ability to enjoy life are all involved. The disease attacks all classes but is found chiefly in the villages and rural districts where knowledge of sanitary measures and lack of sewerage are wanting. It is easily cured and prevented. The Rockefeller Hookworm Commission with a million dollars at its disposal in conjunction with the local health authorities have for the past two years visited by their hundreds of skilled physicians and sanitarians even the remotest section of the South and cured many thousands of these patients and taught them the principles of hygiene and sanitation.

In time I believe it will develop into one of the greatest philanthropies the world has ever seen.

DISCUSSION OF

EDGAR A. HINES' PAPER

BY

WALTER J. PHELAN

Inspire the children with the story of the wonderful discoveries in medical science during the last twenty years, and of the great resultant benefits to the human race. Tell them of the new warfare waged by humanity against its microscopic enemies. Buffalo is about to celebrate Perry's victory. Make the children familiar with the names of the heroes and martyrs in the fight against yellow fever, typhoid, and other once dreaded diseases. President Eliot's selection, a few years ago, of the name "Avenue Pasteur" for the great avenue fronting the Har-

vard Medical School Building in Boston, indicates a growing appreciation of the heroes of benevolence. "Health is the first wealth," says Emerson. "The science of self-preservation is the most important knowledge," argues Herbert Spencer. Have the children appreciate thoroughly the *reasons* for health instruction.

The work of the school nurses as missionaries of health in the homes of the children of the great cities cannot be too highly praised. It is a most interesting story: The beginning of the work of the school nurse in London, the home of Florence Nightingale, Longfellow's "Lady of the Lamp," the noble pioneer army nurse. In the slums of the great cities the work of hygienic enlightenment and helpfulness is now being carried on, both in school and home, for the great armies of the children through this splendid new sisterhood of service.

AUTHORITATIVE PROCEDURE VS. PERSUASION, OR EDUCATION IN DEALING WITH PARENTS AND PUPILS

BY

E. A. PETERSON

The purpose of this paper is to enter formal protest to the demand of many Medical Inspectors for mandatory laws requiring parent or guardian to carry out the recommendation of the school physician with reference to care of physical defects, and to show why such laws are unsocial and tend to defeat the very end they are thought to attain.

The mother of this demand seems to be a misconception of the status of the school physician and is due to the fact that we doctors are laboring under the influence of traditions, which grew up out of social conditions which no longer exist or which have changed so much in the last ten or twenty years that they look new. Hence our ethics no longer fit.

The doctor who, twenty-five years ago was an autocrat, enforcing his demands by dangling before the eyes of his patient a picture of dire consequences should his instructions be not followed is now finding his authority questioned, aye even in some cases held up to ridicule.

All of our professional men are coming in for this same questioning, the educator is said to be a back number and a theorist, the lawyer a crook and the preacher a talker of fiction.

These things have come to pass largely because, for many years these professional men were so much better educated than the masses that their utterances were accepted without question. Fortified by this thought, perhaps drunk with this thought, many teachings and principles were unconsciously thrust down people's throats simply because they redounded to the advantage of one of these classes and because people didn't know any better. Please do not understand me to be accusing some of the finest men this country has produced with conscious and malicious cheating. I am not, but the same laws which to-day are said to tend to influence a surgeon to decide for an operation rather than against it functioned at that time and in the same way largely. If it was not pressure for money it was for honor and fame.

Within the last few years schools, colleges, newspapers and magazines have done much in raising the average intelligence and people are more and more thinking for themselves, take pride in it and of course resent with all the force of their character any insinuation that they are incompetent in this respect.

People used to take sugar pills and have no thought but that some wonderful drug had done away with their pains simply because the doctor said so. People still take sugar pills, but to-day many of these same persons, after the pains subside, announce that they have been "fleeced." Of course, doctors realize that they have fleeced themselves. People in their weaker moments absolutely demand sugar pills, and the "necessities of life" demand that doctors dispense them. Is this a vicious circle?

The fact, however, that people are thinking through these things (indicated by the growth of all sorts of healing sects) points to this, we doctors are not held in as high repute as our predecessors of a decade ago, or at least our word is not accepted to the same degree.

Now, while these great changes have been taking place in our social conditions and beliefs, we doctors have endeavored to "stand pat," with the inevitable result. The people have "gone off and left us."

My first point, is that people do not want these laws.

My second point, a corollary to the first, is that we doctors can't have these laws passed because the people are not enough in sympathy with us, and any attempt to pass mandatory laws brings out a thousand accusations that doctors are trying to fill their purses, and these accusations do not all come from anti-medical sects as we so like to explain.

People do not want these laws because the practice of medicine is not yet a science. Our doctors are better trained to-day than ever before and are better able to cope with disease than ever before but even the best doctors disagree, so much in fact that people are not deeply enough impressed to allow themselves to be forced into the acceptance of medicine as a science.

But the chief reason why people do not want mandatory laws is because as they have increased the power of thinking for themselves, they have demanded means of exercising that power and people hate mandatory laws of all kinds, except those which have arisen out of needs plain to all, because the opportunities for deciding for one's self are thereby lessened. We Americans cannot be forced easily into anything because we are becoming more and more independent, more and more able to think for ourselves.

My third point is that even though we could have passed all the mandatory laws suggested, the result would be a lessened, rather than an increased efficiency as far as our Medical Inspection Departments are concerned.

Our Medical Inspection Departments are growing into broader and broader fields of work. Those first organizations had to do only with prevention of contagion, then was added the physical examination to determine abnormalities and defects then followed the correction

of physical defects in order to bring the child up to normal. (It is to this end that most mandatory laws are suggested) but now it is becoming of more importance than either of these two ends, to raise the standard of "Normality."

The junior office boy's definition of health: "What you have after a sick spell leaves," is not sufficient, although we have allowed it to become accepted generally. We are now thinking of health as a state which can withstand the assault of all disease and which will allow of much greater effort than we can now exert without fatigue.

This state of health cannot be attained alone by the use of scalpel, ophthalmoscope or dental instruments, in fact, only a small part is played in most cases by these tools. The instrument here best used is education and if this tool is to be used, mandatory laws have no place. We cannot antagonize and lead, we cannot push and pull at the same time.

Sometimes we fail to bring about a desired result in the way of having "Johnnie's tonsils removed." In most cases, however, it is because we have been crude in the technique of persuasion and education which of course we must seriously consider and develop. But even though we have done our part well and still fail, it is better in the long run to let one individual suffer, even die than by using unsocial means antagonize a larger number of people and sacrifice the good, to a great many, which would come through sympathetic coöperation.

James A. was a boy 7 years of age. The school doctor recommended that his tonsils be removed because he had been having recurrent attacks of tonsillitis, necessitating his absence from school and causing him to become backward in his work. The parents refused to have the operation performed and were brought into Juvenile Court by the doctor to answer to the charge of neglect. The parents were people of some prominence in their district and all their friends sympathized with them. The Judge demanded that the operation be performed and it was done but the doctor lost his influence with the entire district and when he suggested care of teeth, something for which the Judge said he could not hold the parents, he was hooted, and those people gloried in showing they were not following his directions. What was the gain, since the removing of tonsils is one of the least important functions of these new departments and the creating of higher ideals of living the most important? One pair of tonsils removed and a whole district antagonized.

In one of our nearby cities several reputable business men "fined up" with some parents who were being coerced in this way. Newspapers took side on the matter and did so much harm in shaking the confidence of the people in their Medical Inspection Department that it will take years to get it back to a place where it can have great influence in the

educational field. These types of cases could be recounted in great number.

Another case which came to my attention, although it did not occur in a Medical Inspection Department, illustrates the result of proceeding along the opposite lines.

An Italian mother brought her baby to the dispensary. It was very ill, so ill in fact that the dispensary doctor feared for its life and told the mother that the only hope for the baby lay in leaving it in the hospital so that it could be best cared for. After much persuasion the baby was left and immediately began to improve; the mother kept asking to be allowed to take her baby home, but each time was persuaded to leave it; after two days, however, she appeared at the dispensary accompanied by one of the influential men of her district and together they demanded the baby.

The doctor pointed out the fact that the baby had improved, and both agreed, but the doctor was told that the mother had cried during all of the two nights her baby had been away and that the baby's improvement was probably due to providential care anyway. The doctor could have called up the court and taken the baby from them but he decided differently. He told the people that if they took the baby home it would probably die, that he wanted to keep it at the dispensary and save it but he was going to put the responsibility on them. They took the baby home, it died, the friend came back to have the death certificate signed and in his talk with the doctor said that he saw his mistake and that in the future he would use all his influence to get his people to follow the instructions of the Dispensary doctor. He has lived up to his pledge. Was that too great a price to pay for the health of all the babies in that Italian settlement?

If our work consisted entirely in correcting defects, defects I mean which could be corrected by operative procedure, then it is within the bounds of reason to say that by dint of great labor we could work out mandation laws which would cover all of our cases. With the emphasis being placed more and more, however, on the importance of right living, mandatory laws which would cover all our cases could not be suggested.

Because, then, of the psychological effect of mandatory laws on the people with whom we work, and because of our most important works being in a field which legislation cannot reach, I maintain that in order to be most efficient, Departments of Medical Inspection must work without authority, that is, without police power.

They must be only advisers, educators, child helping agencies.

THE TEACHING OF HYGIENE

BY

LILLIAN M. TOWNE

In the Boston public library, may be found a series(1) of books showing the movement for the teaching of physiology and hygiene in the United States from the close of the eighteenth century to the present day. In 1797, the aim was to give the people simple facts relative to health preservation. Thirty years later, the coöperation of parent and teacher was urged that vigorous health might be secured for the school child's body and mind; but the one hindrance to the success of this plan was lack of information in every quarter. Interest, however, grew along this line; for, in 1837, an investigation was begun in Massachusetts in regard to the child's school environment. The report showed most discouraging conditions, but ended with the conclusion that there must be a thorough training of teachers in a practical knowledge of the science of life and health.

As a partial solution for the problem, Dr. Alcott(2) proposed, in 1841, the distribution of health tracts upon common topics, such as the need for breathing pure air. From 1850 to 1860, text-book instruction was advocated in Maine that the people might be protected from quackery (3); while, at the same time, Catharine Beecher(4) was urging dogmatic instruction that should make for habit in the lives of the young. Thus, early in the study of this subject, emphasis was placed upon both knowledge and habit.

With the passing of the years, two leaders in educational progress came to the front—Henry Barnard, whose work in hygiene is authoritative to-day, and Horace Mann, the unifier of the early Massachusetts school system. In 1868, in his book(5) based upon returns from nearly every school in the State; Mr. Mann reports pupils to be studying subjects in the following order of number:

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1. Vaughn: "The Study of Man."
Beddoe: "Instruction in Management of the Human Body."
Ray: "Life by Conversations."
Reynolds: "Principles of Physiology."
Pamphlet: "Relations Between Physiology and Education."
 2. Dr. William A. Alcott: "Health Tracts for Health Preservation."
 3. Lambert: "Physiology in the Common Schools."
 4. Catharine E. Beecher: "Physiology and Calisthenics."
 5. Horace Mann: "The Study of Physiology in the Schools."

History of the United States.....	10,177 pupils
General History.....	2,571 "
Algebra.....	2,333 "
Bookkeeping.....	1,472 "
Latin Language.....	858 "
Rhetoric.....	601 "
Geometry.....	463 "
Human Physiology.....	416 "
Logic.....	330 "
Surveying.....	249 "
Greek Language.....	183 "

Mr. Mann says, "After the elementary branches, there is no subject that should stand higher than that of the laws of life and the observances by which health may be preserved and promoted. I see no way in which this knowledge can ever be universally or even extensively diffused over the land except through the common schools. All other instrumentalities for instructing mankind reach but a small part of the population and so must fail of accomplishing any general purpose."

Through the efforts of Horace Mann and the physicians associated with him, the teaching of this subject was voluntarily extended throughout the Commonwealth; and, in 1885, the teachers' share in this work became compulsory. Courses of study were at once instituted. Beginning with simple lessons in the primary grades, the work was to progress, until the outcome should be a knowledge of health—how it could be preserved, how impaired, how restored.

In the light of this brief historical summary, is it not interesting to note the general condition of this subject in most city schools to-day? Marvelous advances have been made in sanitary conditions. Medical men are giving their time generously and heartily to the interests of the schools. Yet, it is probably true that no subject in relation to its importance for daily living is more neglected in our schools than that of health instruction. Hygiene may be read from certified text-books, but it is not taught authoritatively, observationally or casually as other subjects in the elementary curriculum are.

In high schools, physiology has been placed largely on an elective basis with botany and zoölogy. Thus, in one year, the following data were gathered from nine Boston high schools:

Of pupils planning to teach,

102	were studying botany,
66	" " zoology,
17	" " physiology.

Of pupils not planning to teach,

639	were studying botany,
370	" " zoology,
52	" " physiology.

Within the past two years, the high school teachers of these subjects have combined the three in a general course in biology; but whether the emphasis shall be botanical, zoölogical, or physiological will depend upon the training and perspective of each teacher; for only in the topic "Health Laws" is there direct relation to the life of man. In addition to this course, a certain amount of hygiene is compulsory, one point out of seventy-six being necessary for high school graduation. But the number of pupils in sections receiving this required instruction ranges from twenty to one or two hundred; so that good learning through the discovery of facts and the making of applications cannot be general.

The anomaly of such conditions is serious, when one remembers that high schools help to train students who are soon to teach in the grades.

No normal school, with its professional problems, can occupy itself too much with academic training in hygiene. Yet, thorough knowledge, not only of subject matter but of teaching method as well, is vital; if the young teacher is to wake the interest of the grade pupil in such simple health problems as may come easily within his apperceptive reach.

Considering the instruction, or rather the lack of instruction in hygiene in normal schools, Professor Ternan shows that eighty-four normal schools offer either no hygiene, or else none aside from that given incidentally in connection with physiology. Nine schools give neither hygiene nor physiology, while those giving physiology only, devote so little time to it that very little can be accomplished in hygiene(1).

Surely, one cannot but question why practice so violently disagrees with theory and what the remedy may be, when an educational authority writes that the teacher who is to control human nature must understand not only the science of psychology; but likewise the sciences of biology, especially human physiology and hygiene. And that the well-equipped teacher will know and apply physiology and hygiene(2).

It may be thought that, if compulsory requirement for twenty-five years has brought no better results in the teaching of hygiene, such educational words are of little help. Geography, however, has been required since 1826 (eight-seven years); yet it is only within the past two decades that, in some of our best city schools, its study has advanced beyond the mere mastery of a text-book. So, the question comes, what changes must be made if the modern hygienic aspect is to vitalize health teaching, as field work affects geographical instruction to-day?

First, there must be the conviction of school authorities and of influential associations that health teaching must have its proper amount

1. Ternan. "The Teacher's Health," p. 111.

2. Thorndike. "The Principles of Teaching," pp. 7, 12.

of time in the school curriculum; and the belief that teaching its problems is more essential for an effective life than solving many types of arithmetic problems, mastering dictation exercises, and so on. Isolated groups of teachers working here and there cannot advance the prestige of a subject. It is organized action, based on belief, that alone will help the young teacher and the authorities who engage him to feel that honest teaching is as urgently necessary in hygiene as in those subjects in which pupils are tested and marked.

Secondly, there must be thorough preparation of teachers by colleges and training schools that essentials in physiology and hygiene may be wisely selected and adapted to the needs of individual classes. Teachers rely upon text-books, till instruction tends to be static and descriptive only. The minds of children are objective and adapted to discovery through experiment and doing. To meet this need requires teaching skill and effort. Hence, with a crowded curriculum, it is not strange that for the half hour lessons, the text-book has proved indeed a blessing to many a teacher.

What it means, however, in an actual case to a boy of ten may be shown by the following. The boy's report in science being unsatisfactory, he was required to study at home in the evening. With nothing but words and text-book diagrams for tools, he was trying to remember facts about the belly and the tendon of a muscle. Concrete association of these parts in a leg of lamb with the same parts in the biceps of the arm aroused his enthusiasm, so that his one desire was to show his teacher and mates what he had learned. This is only one of many instances in which thought upon method would revivify interest in topics within the child's experience. Through teaching this subject in the elementary grades, in the high and in the normal school I realize fully the value of a text-book, but the thing to be deprecated is dependence upon it at the expense of the child's development.

From teaching, it has been my privilege to pass to helping in the supervision of young graduates, as they fill substitute positions in our city schools. The discrepancy between courses of study and the needs of these young teachers in conditions as they exist has been at times almost startling. For, again and again, as I have sat in a class-room, I have asked myself what would I do or teach in hygiene or nature study, if I were in the place of this inexperienced teacher trying to meet all requirements to the best of her ability? The solution of such a difficulty represents a problem not germane to Boston alone. It is common to all; for everywhere in different city sections, and in rural regions, the young teacher needs help.

What has been attempted in the line of help in my own city? In this era of discussion as to whether courses of study would better be made

by teachers or planned by school officials, Boston, in the last six or seven years, has given much freedom to her teachers.

In 1908, a committee(1) selected from every grade worked steadily for a year in planning a detailed course with suggestions for the teaching of physiology and hygiene. Trial of this course showed that the need was for simplification rather than details. Therefore, in its revision in 1910, the committee included only the minimum essentials.

Acting upon the committee's suggestions the Board of Superintendents

First, adopted the present "Provisional Course in Physiology and Hygiene," whose general plan is shown in Chart I.

Second, increased the time given to this subject in elementary grades from 120 to 240 minutes per week.

Third, replaced books that had been long in service with text-books of more recent date and added supplementary books for reference or reading purposes.

Fourth, provided frames for a "Hygiene Teaching Exhibit." This is an exhibit of material sent in by schools that is representative of actual work accomplished or that is suggestive of helpful teaching devices. Crude and simple the Exhibit will always be; but, each year, it has been most valuable in giving the beginning teachers standards of work to be attained. Later the Normal School, also, started an exhibit of its teaching work in physiology and hygiene, so that the visitor has been able to see the transition in this subject through the elementary grades to its completion in the Normal School.

Fifth, expenditure was authorized from the per capita appropriation for the purchase of a set of "Langworthy's Dietary Charts" for each district. Such a recognition of the need of purchasing equipment for the teaching of hygiene in the grades is surely a good omen for the future.

1. Frederic H. Ripley —Principal (Chairman).
Chester H. Wilbar —Grade VII.
K. Gertrude Marden— " VII.
Annie E. Bancroft — " VI.
Ellen C. Wiseman — " V.
E. Leora Pratt — " IV.
Fanny M. Morris — " III. (Assistant in charge of primary building).
Laura S. Russell — " II.
Lillian M. Towne —Boston Normal School.
Maurice P. White —Assistant Superintendent in Charge.

Sixth, in 1910 and 1911, a course in "Applied Physiology and Hygiene" was arranged for about 350 teachers who were taking promotional examinations. The topics treated were grouped under four heads: The child's body, his habitat, his activities, and the teacher's work. Each lesson was concrete and most simple, but the enthusiasm apparent in the work showed the teachers' desire for professional help.

The Boston Physical Education Society has also aided in this work, in that it has devoted one of its meetings to a demonstration of the teaching of physiology and hygiene to pupils from three elementary grades. This experiment placed before educators and medical men in a concrete way what the schools were trying to do in this subject. Both strength and weakness were revealed in the teaching; but, through the undertaking, possible avenues of help have been opened for the future.

This brief summary of the initial steps that have been taken in one city may be suggestive to others. Progress, however, comes through the meeting of unsolved problems; and, of these, there are surely many that relate to the teaching of hygiene.

First, there is need for a scientific combination of the courses in hygiene and nature study in the elementary grades that time may be economized; and that all helpful factors may contribute to a central unit, namely, active learning as related to man's work and health. Such a combination might well be followed in the high school by courses in physiology and hygiene differentiated to meet the needs of pupils entering different vocations.

In the normal schools, there is needed not only an emphasis upon knowledge and teaching method, but also definite training in practical habits for the future teacher. To have learned, for instance, the theory of food preservation is not economic of time; if, in the schoolroom, standards of hygienic living are violated by the kind of care given children's lunches. For, it is not what the young teacher says, but what she does and requires that makes the impression for hygienic habit in the life of the child. When future teachers shall come to the normal school equipped with a training in hygienic habit from the elementary grades, with a scientific training in subject matter from the high schools, then will the problem for the preparation of the teaching of hygiene have been more satisfactorily met.

Second, another vital need is some method of helping teachers in service to keep abreast of advances in hygienic knowledge that no system of text-books can ever cover. Perhaps, illustrated lectures by experts or pamphlets provided by Boards of Health or other associations may meet this difficulty; but, however it may come, coöperation of leaders

in hygienic knowledge with the schools will mean a valuable advance.

Third, an immediate need is the providing of simple charts and models, of slides and apparatus whereby the teaching of hygienic principles may be made concrete and experimental. In a book giving lists of 600 lantern slides and steographs for "Visual Instruction,"(1) there are only a very few that could be applied in the teaching of hygiene.

Among the numerous books given for reading in the "Course for Normal School Pupils in Literature for Children,"(2) the statement is made that there is little general literature to supplement formal instruction in this subject. Books listed as text-books in many cities are given, but nothing more. Surely, if hygiene is to be as well taught as other subjects, there is need for organization of help in the direction of well chosen equipment that will create an interest not only among pupils, but will also prove a valuable asset for parents' meetings in any community.

And fourth, the greatest need of all, because it relates to the child himself, is increasing the importance of this subject in the elementary curriculum by making hygienic habits a factor in a pupils advancement.

Hygienic knowledge gained from text-books may be counted, but rarely is the vital thing, the response of the child in caring for his own appearance, in keeping an orderly desk, or a clean floor considered of much importance. Far too frequently are hygienic habits either ignored or delinquencies are made prominent, whereas the strongest force in habit formation is the satisfaction that comes from positive appreciation for effort put forth. That the latter effect may be steadily cumulative till habit shall hold the child outside the school environment as well as within, honest recognition could well be given habits of hygiene that relate to the individual, the school, and its environment, as the pupil passes from grade to grade.

1. "Teachers' Guide and Classification." "600 Set. Keystone Steographs and Lantern Slides."

2. "American Library Economy." "Part V. The School Department."

CHART I.

Schematic View of the "Provisional Course in Physiology and Hygiene."

See "School Document, No. 8, 1909."

Grades I, II, III.	IV & V.	VI & VII.	VIII.
I. Time per Week: Gr. III, 30 minutes	Each grade, 30 minutes.	Gr. VI, 30 minutes. Gr. VII, 60 "	60 minutes.
II. Hygienic Habits:			
1. For the individual.	.....	.....	1. Relations between personal, school, home and public hygiene.
2. In the school.	.....	.....	2. Special school hygiene.
3. In the home.	.....	.....	3. Community hygiene.
III. Method:			
1. Authoritative directions.	1. Observation of material.	1. Text-book study.	Text-book study.
2. Experiments.	2.....	2.....	2. Gathering of data by pupils from Boards of Health, etc.
3. Teaching.	3.....	3.....	3. Teaching aided by lantern talks.
4. Simple duties given individuals.	4. Group work for the	care of the school.	4. Group work for applying principles learned.
IV. Knowledge.	.....	.....	.....

THE TEACHING OF HYGIENE AND SANITATION IN NEGRO SCHOOLS

BY

R. H. WATKINS

In recent years there has been much organized effort on the part of physicians and educators and of the government—national, state and municipal—to improve sanitary conditions throughout the country; but, although the death rate among negroes is from 60 to 80 per cent. greater than among whites, this effort has not been specially directed toward the negro. In the south, particularly, he is often left out of account entirely, both in health education and in the enforcement of health laws.

It is believed generally that the abnormally large percentage of the deaths among negroes occurs in infancy and early childhood; but from the mortality tables of the last census, the proportion of deaths under five to the total number of deaths is smaller among negroes than among whites. The following table is based upon the last census figures, and gives the percentage of all deaths under five to the total number of deaths for whites and negroes:

	NEGROES	WHITES
1. Birmingham.....	23	28
2. New Orleans.....	21	21
3. Richmond.....	34	25
4. Memphis.....	17	19
5. Atlanta.....	21	26
6. Chicago.....	16	34
7. Boston.....	23	27
8. New York.....	33	32
9. Cincinnati.....	21	20
10. Cleveland.....	23	35

The total number of deaths among whites in the area composed of the ten cities was 141,180, of which 42,586, or 30 per cent., were of children under five. The total number of deaths among negroes in this area was 13,441, of which 3,221, or 24 per cent., were of children under five. There is a still greater difference in favor of the negro for children under one.

The physical characteristics of the negro and his relative susceptibility and resistance to diseases offer an important and interesting field of investigation. From measurements made of 238 negro and 241 white children of approximately the same age, I was able to make some

interesting comparisons. There were 105 negro boys and 121 white boys. The average age of the negroes was 11.79 and of the whites 11.81 years. The average height of the negroes was 56.76 inches as against 55.61 for the whites, and the average weight 82.07 pounds as against 73.83 for the whites. The average ages were practically the same, there being .02 of a year difference in favor of the whites, but the negro boys were taller than the white boys by 1.15 inches and heavier by 8.24 pounds. These measurements for the girls showed almost identically the same differences. There were 133 negro girls and 120 white girls. The average age of the negroes was 11.71 and of the whites 11.56 years. The average height of the negro was 57.83 inches as against 56.10 for the whites; and the average weight of the negroes was 84.59 pounds as against 75.74 for the whites. The negro girls were .15 of a year older than the whites, were 1.73 inches taller and outweighed them by 8.85 pounds. The negroes were more than ten per cent heavier than the white children of the same age. The negro's period of infancy is shorter than the white's and his development more rapid, but this is not sufficient to account for so great a difference in weight and height. The negroes also had larger chests, broader shoulders, larger waists, larger limbs, larger feet and hands, and larger and stronger jaws and teeth. The heads of the negroes are more irregular in size, but the average size was smaller, being slightly shorter in both dimensions than the heads of the whites, the cephalic index being practically the same—77.4 for negroes and 77.6 for whites.

From physical examinations by Dr. Joseph S. Gatlin, the health physician, and myself, we found that defective vision was six times as frequent among the whites as among the negroes, bad teeth 1.6 times and adenoids 7.3 times as frequent; while enlarged tonsils were 1.4 times as frequent among negroes as among whites, and enlarged cervical glands 5 times as frequent; indicating, perhaps, a greater predisposition to tuberculosis. In spite of his lack of care of them, the negro's teeth are generally good. In fact, the negro's strong jaw and good teeth are his salvation, as the question of good health is largely a question of good teeth.

From a further study of the mortality tables of the last census, it is found that the proportion of deaths for all ages under 15 and for all ages above 50 to the total number of deaths for all ages is smaller for negroes than for whites. Just the reverse is true for all ages between 15 and 50, the period of greatest difference being from 15 to 30. During the first period, above 15, the death rate in Birmingham is 3.7 times as great among negroes as among whites; in New Orleans it is 3.2 times as great, in Richmond 3 times as great, in Memphis 3.4 times as great, and in Atlanta 3 times as great. These ratios are practically the same

for the second and third periods between 15 and 30. During the entire period the death rate in these five cities is three times as great among negroes as among whites. These are facts of the greatest significance. This is the period when dissipation, venereal diseases and tuberculosis make their inroads, mowing down their victims by thousands. It is important to note just here that most negro house servants are between the ages of 15 and 30. At 15, or soon after, the negro girl is thrown on her own resources, and must earn her living by personal service, usually in the homes of white people. By the time she is 30 she usually has a house full of small children, and must remain at home.

According to the figures of Dr. Thomas Jesse Jones, based on the 1900 census, diarrhoea, digestive, circulatory and nervous diseases are less fatal among negroes than among whites. Dr. Styles, the hookworm authority, says, "The negro is relatively immune to direct effects of hookworm disease." Dr. Jones is my authority for saying that consumption, pneumonia, typhoid fever and malaria are more fatal among negroes than among whites. Dr. Styles estimates the death rate from tuberculosis to be 173.5 per 100,000 for whites and 490.6 per 100,000 for negroes. The greater death rate among negroes from malaria and typhoid fever is wholly the result of environment. The negro is less susceptible to malaria and has greater resistance powers to this disease than the white man, the high death rate to the contrary notwithstanding. Many undrained portions of Mississippi, Louisiana and other southern states are given over to the negroes because white people cannot live in them at all. In these districts the negro population is the densest. In Issaquena County, Mississippi, 95 per cent. of the inhabitants are negroes. Typhoid fever is more frequent among negroes because of their unsanitary environment, and more fatal because of improper nursing and the lack of medical attention.

Tuberculosis is almost three times as fatal among negroes as among whites. This, too, is largely the result of environment. The fatality from this disease is enormously greater among negroes than among whites. When a negro has tuberculosis, patent medicine is his only resource. The negro's inherent powers of resistance to tuberculosis are extremely low. I have often heard my grandfather speak of the fatality from this disease among the negro slaves. At that time, consumption was thought to be hereditary and not contagious, but the fatality from consumption among the negroes of Virginia and North Carolina was so great that it was thought to be a different disease from the consumption of white people, and that it was peculiar to the negro. It was generally known as African consumption, was known to be extremely contagious and absolutely fatal. Now the slaves in this section of the country were especially well treated before the war. The

masters, as a rule, were small slave owners, housing conditions were good, food and clothing abundant, and the slaves had the same medical care that the master's family had—better than conditions among negroes to-day.

The question of the physical inferiority of the negro cannot be determined except by comparison with the white of his own plane of living. And this, I think, has not been done. The large death rate is almost wholly the result of the negro's unsanitary environment, of his ignorance of health laws, and of his utter inability, from ignorance and poverty, to protect himself from diseases and to care for himself physically.

Our responsibility for the negro is greater and our relation to him closer than to the Indian or Chinaman, or to the poorer class of immigrants. We are not in close proximity, socially or industrially, to these. In the case of the negro there is of course no social proximity, but industrially the closest proximity possible exists. From the census reports, 722,056 negroes in the United States are engaged in domestic service as cooks, house girls, nurses, midwives, barbers, hair dressers, washerwomen, janitors and porters. The total number rendering personal service to white people runs over a million and a quarter. These servants as a rule live in negro quarters, under the most unsanitary conditions. When a contagious disease originates, housing conditions are such that it is impossible to isolate it, a physician is not called in, and the character of the disease is often not recognized. And, even when recognized, it is not reported to health authorities or to employer, because to do so would mean a temporary loss of work, and the weekly wage is a question of meat and bread and house rent. When rent is not promptly paid, the negro must move. The negro women come from unsanitary homes to cook our meals and nurse our children. Thus every contagious disease that the negro has is brought to us at once. Preventable diseases will, therefore, always be, if not as fatal, almost as frequent among the whites as among the negroes; that is, unless white people are less susceptible to those diseases than the negroes, which cannot be shown.

The large death rate among negroes is a matter of serious consequence to the entire nation for two reasons: First, from a purely humanitarian standpoint—we are our brother's keeper; second, purely as a matter of self-preservation, we must face this negro health problem, and face it now. This is the race problem of the South, the only race problem I know. The negro is not naturally a criminal. From an examination into the facts, it is found that nine out of ten victims of mob violence are dope fiends, and were under the influence of bad whis-

key or cocaine when they committed the crime. Much of this is the result of the patent medicine habit, the negro's only remedy for chronic ills.



This is a picture of thirteen typical negro homes of the poorer sort. The alleyway here shown is 95 feet long and 12 feet broad. There are 25 families living on this alleyway, an average of three persons to the room. The rooms are not of uniform dimensions, running from 8 x 10 to 12 x 14 feet. Each family occupies two rooms. Each door means a separate family. There is one small, badly kept surface privy, situated about fifteen feet to the rear, for the thirteen families. This picture was taken a few weeks ago. Although it was warm weather, notice the number of doors and windows that are closed. This illustrates the negro's constitutional dread of fresh air. At night, even in summer, windows are almost all down and doors closed. It is needless to say that these houses reek with filth and disease germs of every description.



Another house of the poorer sort. Conditions here are not quite so unsanitary, though the number of occupants per room is larger. The father and mother of this family have had twelve children, eight of whom are living. The young negro woman standing by the swing is the oldest daughter. She is eighteen and is the mother of two of the small children. A younger sister, not in the picture, only fifteen, is a mother also of two children. The little boy, dressed like Kipling's "Poor Benighted Hindu," is the son of the eldest daughter. His name is Roosevelt, but they call him Booker T., for short. This fact indicates that they have some enlightenment, at least. I hope the little boy will live and that he will be a credit to the great men for whom he was named.



This young mother is only sixteen; the infant a month old. The incident that interested me in this case illustrates the negro's utter helplessness in case of sickness. The infant is a sufferer from spasms. The remedy the mother uses is a concoction of bed bugs and bluing. The child is alive and is actually better—ergo, the remedy is good and can be recommended to others. The point is, it costs nothing to try such household remedies. If I had the time, I could write a volume on *Household Remedies of the Negro*, that would be a valuable addition to the sum total of medical knowledge.



This is a picture of a building that was used my first year in Laurel as a negro school. It was a one-teacher school and the enrollment was 97. This was six years ago.



Through the efforts of the Superintendent with the coöperation and help of the Negro School Improvement Association, the old shack was soon replaced by the structure shown above. The negroes, from their meager earnings, bought and paid for the lot, have equipped the auditorium with seats, and have given the school a \$375 piano and a \$75 organ. Perhaps you would like to know how the school got its architectural form. All the money I could get for the building was \$1,500. I planned the first story—a four-room building—then left for my vacation. Upon my return, to my amusement I found the building as you see it. The negroes secured the appropriation of an additional \$1,000 in my absence and planned the second story themselves. I take the arrangement of the windows as a personal rebuke and have made no further attempts along architectural lines.



This is a picture of one of the better class of negro homes in the "Bon Ton" Addition, near one of the negro schools. It is not one of the best homes, but it is a fair type of the better class. Sanitary and health conditions generally are good. About 40 per cent. of the negroes in this neighborhood live in homes almost, if not quite as good. Many of the negroes of this class belong to the School Improvement Association. They are full of public spirit and are excellent citizens, are organizers of anti-tuberculosis and health leagues, and are intelligent enough

to coöperate in every possible way with the school, in an effort to improve the health conditions of their race. Many of them have come under the influence of Dr. Washington, of Tuskegee, and Dr. Frissell, of Hampton. These men and the institutions they represent, through organizations directed by them, publications like the "Southern Workman," that have a wide circulation among the better class of negroes, and through health rallies and conferences, are doing a very wonderful work.

I have gone into all of these questions of death rate, sanitary and hygienic conditions at length, because they are extremely important in order to set forth, as forcibly as possible, the need for the teaching of sanitation and hygiene to negroes. With the proper leadership and the coöperation of the intelligent class of negroes, it is the easiest thing in the world to give the proper teaching along health lines. The requirements of State Boards of Education along this line amounts to nothing. For instance, the school law of Mississippi requires health teaching in all schools, but the text used is a technical treatise prescribed for the seventh and eighth grades and too difficult for negroes of any grade. The oral instruction and health supervision that is given in the white schools is neglected entirely in the negro schools.



Another One of Our Negro Schools



By contrast, a group of white schools. The combined attendance at the two negro schools is 1,046 as against an attendance of about 1,256 at this group of buildings. The pictures of the negro schools were made during vacation; the picture of the white schools was made when the school was in session and upon an occasion when the children were in holiday attire.



A section of a negro quarter where houses are small but sanitary conditions are comparatively good. Note the contrast between 1 and 9. The teaching of home economics, sanitation and hygiene is to a considerable extent responsible for this improvement.

The first really effective work I have ever had done in my own system of schools, in teaching hygiene and sanitation to negroes, was three years ago. Through the Jeans Fund we secured an industrial teacher for the negro schools. She was engaged to teach home economics, laundering, cooking, sewing, etc. The teaching of hygiene and sanitation was to be only incidental and secondary. Soon after her arrival

an epidemic of scarlet fever broke out. All at once there were a dozen or more cases in the white schools and fifty or sixty children excluded from school because of probable exposure. At my request, there was held a meeting of the physicians at my office and a rigid system of school inspection was established. It was soon found that the infection had spread from the negroes. I requested the industrial teacher to suspend her work for a time and take the situation in the negro schools in hand. She was a woman of unusual tact and knew her own people. She visited the home of every child in the two negro schools, reported suspicious cases, had neighborhood meetings of mothers and organized them into health leagues, organized and instructed the negro teachers, gave lessons weekly in all of the rooms on hygiene and sanitation. That was a year of epidemics. Whooping cough, measles, small pox and chicken pox followed each other in quick succession. During this time the services of this teacher to the school system and to the public were simply immeasurable. As a result of her work, health conditions among the negroes are already noticeably better, and, as an indirect result in the white schools, the effect of her work is quite as noticeable. It is significant that the average attendance in the white schools during the session 1912-1913 was 6 per cent. above that of the previous year; this was largely due to the fact that we had less trouble from contagious diseases than formerly.

The school board is so firmly convinced of the necessity of teaching hygiene and sanitation in the negro schools that they have authorized me to engage a special teacher for that purpose. She is to teach home economics and hygiene and sanitation, the purpose being to put into immediate practice all principles taught, and to waste no time with the technical phases of the subject. The negro is no theorist—he learns from doing. As an illustration, negroes are the best cooks in the world, but they learn from cooking. I have never yet seen a negro cook who followed a recipe. A small four-room cottage adjacent to the largest negro school has been rented and will be equipped as a model home. The teacher will meet the girls of the 5th, 6th, 7th and 8th grades twice a week. Bathing facilities will be furnished and the principles of bathing will be taught and applied as needed. The girls will plan and make their own clothes, wash their own clothes, and plan and cook their own lunches, under the supervision of this teacher. The care and feeding of babies will be taught, babies being borrowed from the neighborhood for the purpose. It is not at all difficult to secure the loan of a baby for five or six hours for the purpose of demonstration. The girls will also be taught how to care for the sick, and the use of simple household remedies.

This teacher will visit every room in the system once a week and give 20-minute health talks. The work in the lower grades will be all oral. Practical and immediate application of the principles taught whenever possible will be insisted upon. Along with oral hygiene there will be mouth inspection and application of the tooth brush. With hygiene of the skin, will be inspection of the hands and finger nails, and with hygiene of the head, there will be a generous use of fish balls and alcohol, solution of bichloride, etc. .

This special teacher will meet the regular grade teachers as stated intervals and outline the work. No books will be used by the children, but all teachers will be provided with Richie's Primer of Hygiene—one of the most effective books for this purpose I know. Hampton Leaflets and other books and leaflets of this character will furnish the material for the teachers.

She will be engaged for the entire year, and in vacation, she will live in the model home and do settlement work. Anti-tuberculosis and health leagues will be formed among the negroes and church and neighborhood meetings will be held, at which such questions as dangers from social impurity, from alcohol and cocaine (the most deadly enemies of the negro race), contagious diseases and other health questions will be discussed. We hope to get to the point when we can have a real baby saving show as Philadelphia has.

The thirst of the negro for this knowledge he is in such dire need of is positively pathetic. It is like the voice from Macedonia crying, "Come over and help us." As an illustration, soon after I announced that we would establish this model home for negroes, one of my negro principals notified the board that he had a certificate of deposit for \$200.00, raised by the School Improvement Association, to be used in equipping a model home, which the city soon expects to build. Through this Association nearly \$800.00 has been raised in the past four years for school improvement.

Now, my friends, I have not exhausted my subject, but I have exhausted my time. I hope that what I have said, through the publicity given it by this great congress, may arouse the entire nation to the necessity of making some definite effort to conserve the health of the American negro, through the teaching of hygiene and sanitation in our public schools.

NEEDLEWORK LESSONS IN THE ORDINARY SCHOOL TIME

BY

W. F. UNIA STEYN PARVÉ

In elementary schools; as well in the public as in the private ones, needlework lessons are given to the girls of the higher classes.

These lessons are necessary, because the girls, be they daughters of a workman or the daughters of a man of other position, must already begin young to learn different kinds of needle-work, to become afterwards perfect wives and mothers, able to make and repair the clothes of their husbands, themselves and their children.

In regard to these needle-work lessons, we have to put the question: "At what time ought these lessons to be given?"

Regarding the curricula, they must be given during the ordinary school hours and not in hours out of the school time. If the latter takes place, it is inevitable to give more school hours to the girls than to the boys.

Having inquired of the Medical School Inspectors in the Netherlands, I received information from 31 municipalities.

The results of this enquête are:

In 10 municipalities the lessons are given during the ordinary school hours.

In 8 municipalities the lessons are partly given during the ordinary school hours and partly in the afternoon on Wednesday and Saturday (the free afternoons) or on Monday, Tuesday, Thursday and Friday, after the ordinary school hours, or in the evening.

In all the other municipalities the lessons are always given in the free afternoons or after the ordinary school hours.

Only in 10 municipalities the afternoons on Wednesday and Saturday are free, as well for the girls as for the boys. The hours spent by the girls in needle-work lessons are used by the boys for gymnastics, writing, drawing, manual training (cardboard work) or school walks.

In 10 municipalities the free afternoons are wholly used for the needle-work lessons, in 2 partly, so that a part remains free for the girls.

In 6 municipalities the lessons are given immediately after the other lessons, at four o'clock, in 6 after a rest from one or half an hour, and in 1, one hour before the beginning of the school lessons in the morning.

I suppose that all medical school inspectors will declare that not to give the needle-work lessons in the ordinary school hours, is a fault against hygiene.

Is it right and necessary that the girl has to spend more hours in the schoolroom than the boy?

As to the different systems followed, I must notice:

Regarding the needle-work lessons in the free afternoons, that the boys can go to the fields and woods to walk, to run and to play in the fresh air, and accumulate their health and the development of their body, but the poor girls, locked in the schoolroom, bent over the needle-work, must try to learn the secrets of the art of knitting, sewing, darning, mending clothes, etc.

Is it right to deprive the girls of the free afternoons? to deprive them of the fresh air, walking and playing?

The girl as well as the boy needs to spend these afternoons outdoors in fields and woods, and she needs perhaps more than the boy the opportunity to develop her body, for we know that in the workman class the boy, coming home from school, can play with his comrades in the streets, but the girl must generally remain indoors to help her mother by her housekeeping or to take care of the little children.

And so the school authorities deprive the girls, who have already in several cases a deficit of freedom and fresh air, by remaining in their mother's house, from what they need as well, and more than the boys.

Regarding the needle-work lessons in the morning before beginning the ordinary lessons, or directly after these lessons, I am sure that nobody will admit this method as a hygienic one. The girls must begin earlier, or remain longer in the schoolroom. The latter is surely very bad, because the girls remain 1 or 2 hours in the room, where all the children were together 2 or 3 hours, and where the air can't be pure, even in case of a moderate ventilation. Bent over the needle-work the lungs cannot expand sufficiently and the respiration of air, not wholly pure, must be bad for their health.

Finally regarding the lessons in the evening from 5 till 7, it must be remarked, that in the months of spring and summer there will be enough daylight, not to use artificial illumination, but it will be the question, whether it is strong enough for the sometimes very difficult needle-work, demanding a great exertion of the young eyes. In the other months, in autumn and winter, artificial illumination is necessary, and in some schools this illumination certainly will not be sufficient.

When paraffine lamps are used, these lamps must be of great dimension and 4 to 5 must be lighted. The danger is inevitable that, during the two hours, given without any rest, the air in the schoolroom will

become impure and the girls will not have the quantity of oxygen that they need for their respiration. Headaches, dizziness, bleedings of the nose and anæmia, and perhaps other illnesses will ruin the health of the girls.

Only when the rooms are lightened with incandescent gaslight or electric lamps, and, if possible, reflected to the ceilings, will there be no danger for the eyes and health of the girls.

That evening lessons, specially given by insufficient illumination hurt the young eyes is not to be denied. Examining the eyes of the girls in the highest classes, I found that a great deal of them had a diminution of the vision, and Dr. Straub, Professor at the University of Amsterdam has made a very interesting and important examination of the eyes of school children in the schools of Amsterdam, and a great deal of diminution was fixed by the girls, certainly caused by the exertion of the eyes during the needle-work lessons in the evening by insufficient illumination.

In the Netherlands several school inspectors (not the medical) and teachers declare that it is impossible to give the needle-work lessons during the ordinary school time. The medical school inspectors in a great many of municipalities have demonstrated the dangers and the anti-hygienic act, but in most of these municipalities it was in vain.

The authorities founded their decision upon the opinion, that the girls can't abstain from other lessons.

Happily this opinion is contradicted by that which is shown in 10 municipalities, where these lessons are given in the ordinary school hours and not any difficulty is noted, regarding the course of the instruction.

I suppose that also in other countries the same faults against hygiene exist with regard to the needle-work lessons. I shall be happy to receive information from my colleagues (medical) (school) inspectors in these countries if they are of my opinion and are in accord with my conclusions:

1. Needle-work lessons ought to be given to the girls only during the ordinary hours.
2. Needle-work lessons never ought to be given in the evening.
3. The Congress must try to obtain that in all countries the needle-work lessons will be a part of the ordinary lessons during the school time.

UTILIDAD DE UN "LIBRO PRIMARIO DE LECTURA" APLICADO A LA HIGIENE GENERAL Y EN ESPECIAL A LA HIGIENE DENTAL

POR

MARCELINO WEISS

Y OSCAR UGARTE

Sr. Presidente, Srs. Congressistas:

No pretenderemos, por innecesario, proclamar la gran importancia de la Higiene, arte-ciencia de la salud, de la conservación de la vida: es un axioma.

Pero sí debemos discutir, y cordial y cortésmente invitamos a los señores Congressistas que nos honran con su atención, sobre el modo más eficaz de inculcar estos imprescindibles, vitales conocimientos, en el niño, el ciudadano de mañana, desde los comienzos de su educación; medio único práctico para triunfar en la defensa de su existencia, y medio único también para realizar la propaganda de esos conocimientos.

Hasta ahora los resultados de la campaña en pro de la Higiene Escolar no son todo lo beneficiosos que debemos desear. Al método de la enseñanza hoy en vigor, podría juzgársele superior al cerebro del niño pequeño, que no ha llegado aún al desarrollo conveniente para comprender y retener esas nociones altamente indispensables a la vez que científicas; y esto por la forma de la exposición, no obstante los plausibles esfuerzos de algunos profesores por presentarlas en la más comprensible. Las clases orales indicadas en las reglas por las cuales debe regirse el pedagogo actual, no llenan su cometido por completo, siendo difícil en el niño de corta edad conseguir sólo de esas explicaciones a viva voz, todo lo que nos es dificultoso lograr en el período de la adolescencia.

Por otra parte, sabiendo por experiencia universalmente adquirida, que ciertos conocimientos, cualesquiera que ellos sean, asimilados al principio de la vida racional y facilitados en el primer libro puesto entre las manos infantiles, perduran hasta la muerte; sometemos a vuestra autorizada consideración la reforma que encarna este trabajo, aspirando a obtener vuestra valiosa sanción, por haber recibido antes, de labios de muchos compañeros en estos estudios, frases alentadoras a favor del propósito que nos guía, y porque tenemos la más íntima convicción de que éste será el único medio pedagógico de positivo y seguro resultado para llenar la misión de educadores de la infancia en la ciencia de

todas las ciencias, la ciencia de la perdurabilidad de la vida; con facilidad, fijando, desde muy temprano, en la mente del niño, suavemente, esas reglas que, preservándole de los desequilibrios de la salud, lo hagan *más sano, más inteligente*, acatando así la sentencia del conocido proverbio latino.

De cómo creemos puede obtenerse la finalidad propuesta, por medio de un *Libro Primario de Lectura*, darán una idea bastante aproximada las lecciones del que proyectamos y podemos presentar ante vuestra mirada competente; aunque la forma expositiva, muy apartada de la final, en máquina, no con tipos de letra manuscrita (como nos proponemos que sea la primera parte) en cuartillas, con las ilustraciones aparte y otras muchas faltas que evitaría la impresión de la obra, imposible en el corto tiempo con que hemos contado; deja mucho que desear, y solamente la clara inteligencia de los señores profesores que nos escuchan pueda salvar estas deficiencias apreciando los principales aspectos del método empleado.

En él hemos tenido en cuenta las ventajas del sistema que más nos satisface en la Metodología moderna de la Lectura, tratando también de presentar seguidas las lecciones relativas a letras o combinaciones de sonidos similares; es decir: atendiendo a la igualdad de los sonidos antes que a la de las letras; no dando más de un conocimiento nuevo en cada lección; completándolo otros ya adquiridos en lecciones anteriores; ilustrando profusamente éstas con figuras del género caricaturesco en los casos que sean compatible con la diáfana interpretación de la idea correspondiente, para regocijar al alumno durante la lectura y hacerle el libro más agradable; progresando en el curso de la enseñanza de lo simple a lo complicado con la pausa y la claridad que coadyuvan a un éxito cierto y duradero; y procurando satisfacer todas las exigencias de los sistemas de que puede enorgullecerse la enseñanza primaria de nuestra época en lo que a la Lectura Castellana se refiere: condiciones todas que otros autores extranjeros, más competentes seguramente que el de la parte pedagógica de este trabajo, podrían mejorar honrándonos con acoger nuestra idea en favor de un éxito más cierto de la Higiene Escolar.

Respecto a los conocimientos higiénicos y manera de suministrarlos disimulada y felizmente, en el *Libro Primario* que da lugar a este trabajo, condición que constituye la modesta originalidad que presentamos al juicio de este inteligente auditorio; debemos llamar la atención, primero, sobre nuestra tendencia principal, que consiste en emplear palabras y frases que nos conduzcan, aunque embozadamente, a exponer el precepto de Higiene deseado; sin que, secundariamente, dejemos de ofrecer al niño, en lecciones más avanzadas y en la misma forma, otras reglas de moral, civismo y virtudes elevadoras del sentimiento y el espíritu; siempre

auxiliados por la ilustración oportuna, recreativa y descriptiva, encaminada a hacer repulsiva la falta, o simpático el saludable consejo.

En cuanto al orden seguido en la exposición de estos preceptos, empezamos por los relativos al cuidado de la boca, a la conservación de los dientes, base, pudiéramos asegurar, de una salud perfecta en la mayor parte de los casos, sobre todo en los niños, terreno preparado para los trastornos digestivos más peligrosos cuando las piezas dentales no se encuentran en correcto estado de normal funcionamiento. Dependiendo en muchos casos un buen desarrollo cerebral y una aplicación decidida a los estudios, del estado sano de sus dientes; pues no sólo se han comprobado todos estos extremos sino aun uno más, la influencia indubitable que ejercen en la formación del carácter del niño, los sufrimientos horribles que le ocasionan sus dientes enfermos. Después seguirán las otras precauciones higiénicas sobre pureza del aire, cubicación de las viviendas, horas de sueño, ventajas del aseo y el ejercicio, etc., y cuantas fases de la ciencia que nos ocupa se recomienda tener presente.

Por último: estimando que, al adoptar este procedimiento, se logra con más éxito ver realizado el propósito de que el hombre del porvenir, desde muy pequeño, sepa y tienda inconscientemente a evitar el desequilibrio de su organismo, y esto sin esfuerzos, dulcemente; proponemos se acuerde por el *Cuarto Congreso Internacional de Higiene Escolar*, como lo fué por el *Primer Congreso Pedagógico de la Habana*, las siguientes conclusiones:

Que es grande la utilidad que a la salud del alumno y a la enseñanza de la Higiene, al mismo tiempo que a su propaganda en el hogar de aquél, puede reportar el *Libro Primario de Lectura* que preparamos y continuaremos con los demás superiores integrantes de un curso completo de esta asignatura; siempre que, llenando los requisitos de la Metodología moderna, inculque simultaneamente en el discípulo los preceptos higiénicos indispensables a su vida normal y al mayor desarrollo de su inteligencia; como se deduce de las lecciones expuestas.

Que a esa utilidad coadyuvará también, como poderoso auxiliar que haga las lecciones más recreativas y ventajosas al fin indicado, el uso oportuno de caricaturas en aquellos casos compatibles con la exacta interpretación de la idea correspondiente; contribuyendo así mismo a los beneficios del *Libro* las reglas diluidas de Instrucción Moral y Cívica, en idéntica forma velada que huya de la franca y técnica exposición didáctica, impropia de las primeras edades.

Que esta utilidad debe ser extendida a todos los países representados en el *Cuarto Congreso Internacional de Higiene Escolar*; recomendando a los señores Delegados gestionen, cerca de sus Departamentos de Instrucción Pública, la adaptación del *Libro* motivo de estas conclusiones.

TEACHING HYGIENE AS NATURE STUDY

BY

F. M. GREGG

The "blessed trinity of chance, accident, and mistake" is apt to be operative in the pioneer days of all great movements. The conviction is now widespread that much of the futility and unpopularity of physiology and hygiene in the grade work of the public schools is due to the unhappily chosen matter and the unprofitable manner of presenting the subject to its supposed beneficiaries. The matter has been too technical and the manner has been too exclusively bookish. There has been lack of proper motivation, the topical presentation has been logical rather than psychological, and the appeal has been remote and individual rather than immediate and social.

Many schools and institutions have been struggling for better things, among them the Training School of the Peru, Nebraska, State Normal. In this latter institution an effort has been made in the last few years to work out a more satisfactory course in hygiene (no attempt is made to teach physiology below the eight grade), with the result that while the course is not yet entirely satisfactory, the pupils as a whole in the fifth, sixth, and seventh grades, in which the greater part of this work has been done, have come to regard hygiene as their most interesting and important subject.

The general plan for the lessons employed calls for (1) the selection of some nature-study topic that allies itself with hygiene and that appeals to the stage of the pupils' interests and instincts; (2) the study of this topic in the typical nature-study way; (3) the leading of the pupils by heuristic methods to draw proper inference of a hygienic nature; (4) the establishment of such habits on the part of the pupils as properly grow out of the topic treated, the appeal being to such instincts as will serve as a natural means of motivation, chiefly self-assertion.

Some illustrations will make the procedure clearer. We take as the first of these one from a fourth grade class in hygiene. It is the present judgment of the writer, however, that only with exceptional classes and exceptional teachers may the formal study of hygiene begin as low down as the fourth grade. Such instruction as may be given in the first four grades should be given incidentally to individuals and to groups as the need arises. The larger consideration should be given to the maintenance of conditions that make for wholesome development. It is believed that with the illustration that accompanies (Fig. 1) the

following lesson plan, drawn up and carried out by the teacher, will help to make clear the presentation of hygiene as nature study.



FIGURE 1

Measuring the Pupils' Lung Capacities.

HYGIENE AS NATURE STUDY. TOPIC, BREATHING.

Purpose. To give the child some information concerning breathing and to inspire him to adopt habits of proper breathing and proper posture.

PREPARATION.

Previous Study of the Teeth and Mouth. We have been studying about the teeth and how to care for them, and about the mouth and its uses, and how to eat properly, and in these studies we found that by following the best rules we would feel better and be more attractive to those about us. But there are still other things that will help us to be more healthful and will probably affect our own feelings more than some of the things we have already studied.

Adenoids Result in Breathing Through the Mouth. You recall when we were studying about the mouth, we talked of adenoids. What were they? What causes them? Yes, when we breathe through the mouth it is often because that growth appears. Do you know some boy who

is a real fast runner? Wouldn't you like to be a good runner? Let us see if we can find a way to at least be better runners and be able to climb mountains and take long walks without tiring ourselves so much.

PRESENTATION.

Capacity of Lungs When Erect. The teacher will have a home-made spirometer (a graduated gallon bottle) placed in a large vessel of water. A rubber tube will be inserted in the bottle.

Air in Bottle Would Force Water Out. If we could force some air into this bottle (filled and inverted over water) what would happen to it?

Amount of Air in Bottle Calculated by Marks on Bottle. By these marks on this bottle we can tell how much air we have in the bottle. How may we get air into the bottle? Then let each of us blow into this tube and see who can lower the water most. How shall we do that?

The One That Can Blow the Hardest and Longest Can Lower the Water Most. Yes, the one that can blow the most air into the bottle will cause more water to run out. How are we going to tell how much air is in the bottle? Yes, by reading these numbers.

Child Blows Into Tube. Opal, you may blow now. Take in or inhale all the air you can, standing real straight. Now blow into the tube and we will see how far the water is lowered. Each child will keep his result. Each child will be given an opportunity to measure the capacity of his lungs. The tabulated results will be placed on the black-board.

Mouthpiece Cleaned. After each using, the mouthpiece on the tube will be thoroughly cleaned for hygienic reasons and to impress the need of such care.

Source of Air. Now, where did this air that we blew into the bottle come from? Did we have all the air possible in our lungs? Then what does this tell us about the amount of air our lungs will hold?

Conclusion Concerning Lung Capacity. By this means we can tell the capacity, as we call it, of each of our lungs.

Lung Capacity When One is Not Erect. Do we always sit erect though? How do we often sit? Let us sit in that position and blow into the tube again. Each child will blow into the bottle while sitting stooped or when slidden down in a seat. The results of the lung capacity will be noted. Now let us compare these results with the first ones.

Results Differ. How does the capacity of each of our lungs differ, then, when we are in a different position?

Lungs in a Squeezed Condition Caused Difference. What do you suppose causes this difference? Our lungs are very soft and they are squeezed up when we sit the way you did just now. What is another position that would have a similar effect on the lungs? Leaning over, yes, and we do that so often in school. How should we sit and stand, then, if we want as much lung capacity as possible?

Air in Lungs Supplies Oxygen and Removes Excess of One Kind of Impurity. What is the use of having lots of air in the lungs? Yes, the blood in our bodies has no way of coming into contact with the air except in the lungs.

Picture to Show Circulation. The teacher presents a picture showing how the blood goes through the lungs and then through the body to distribute oxygen again.

Length of Time One Can Hold a Sound, Measures Lung Capacity Also. We make sounds with our breath, too. How might we measure our lung capacity in that way? Yes, we might see who can say "ah" real softly for the longest time. Those records will be kept also.

Composition of Air (1) Exhaled, (2) Fresh. One child will breathe into a jar and then the air in that jar and the fresh air in another jar will be tested to see in which a candle will burn longer. Now, if we were to put this candle into a bottle containing pure carbon dioxide, the flame would go out. What does this tell you concerning the air we exhale?

Carbon Dioxide in Exhaled Air. It must contain carbon dioxide. Do we inhale air like that in the fresh bottle or the other bottle? What kind of air should we breathe?

Change Takes Place in the Lungs. Where is the air changed? Yes, in the lungs where it gives up some oxygen to the blood and takes up some carbon dioxide from it which the blood picked up on its travel through the body.

Exhaled Air and Fresh Air Differ in Composition. Let us try another experiment to see the difference in the air we inhale and the air we exhale. We will put these locusts in different bottles of air and see which will live the longer. Which do you think will live longer?

Animals Can Live Longer in Fresh Air. Why should the one in fresh air live longer? What about the air in this room then? What do you suppose it is? Is it fresh, or does it have carbon dioxide in it? Yes,

it probably has some of both but if we kept the windows closed all the time what would it have most of? Then why is it harmful to sit in a room where ventilation is not provided for?

Bad Odor in Exhaled Air May be a Sign of Decayed Teeth. Now we are going to breathe into these bottles and see tomorrow when we come in from recess how the air in them differs from that out of doors where you have just been. The following day the air will be smelled and the teacher will explain that any bad odor in the schoolroom probably comes from decayed teeth and unclean bodies and clothing. If we have been caring for our teeth as we should, the odor should not be quite so bad.

GENERALIZATION.

Child With Greater Lung Capacity Could Run Longer Distance. Now, Ted and Hugh are nearly the same size; if Hugh has greater lung capacity which one do you think could run the farther without getting out of breath?

Sitting Erect is Beneficial to the Lungs. What effect will sitting erect have on the lungs?

Healthy People Have Well-Developed Chests. What do you notice about the chest and shoulders of real strong looking people? Of the nicest looking people?

We Could All Have Larger Chests. Do you think we could get a larger chest if we tried? Yes, we could and we might try it and take a trial measurement again once a week for some weeks. We should know, though, that there is such a thing as getting too large a chest for our bodies.

Exhaled and Inhaled Air Different. What proof do we have that the air we take in is different from that we breathe out?

Air Should Not Be Breathed a Second Time. Why should we not breathe air that has been breathed once?

APPLICATION.

Books Written. Outline for Writing.

- I. Lung capacity measured.
 1. When erect.
 2. When stooped.
 3. By saying "ah."

2. Composition of air. Experiments with candle flame and locusts.
 1. Exhaled air.
 2. Fresh air.
 3. Bad odor of exhaled air.
 4. Undesirability of breathing foul air.

Lung Capacity Tested Again. After a week the lung capacities of the children will be tested again and the results compared with those taken previously. Repeat for several succeeding weeks.

Children Will Sit Erect in Class. The teacher will be especially careful about the sitting position of the children in the class after this study, and the ventilation of the room will receive more attention from the teacher and the children.

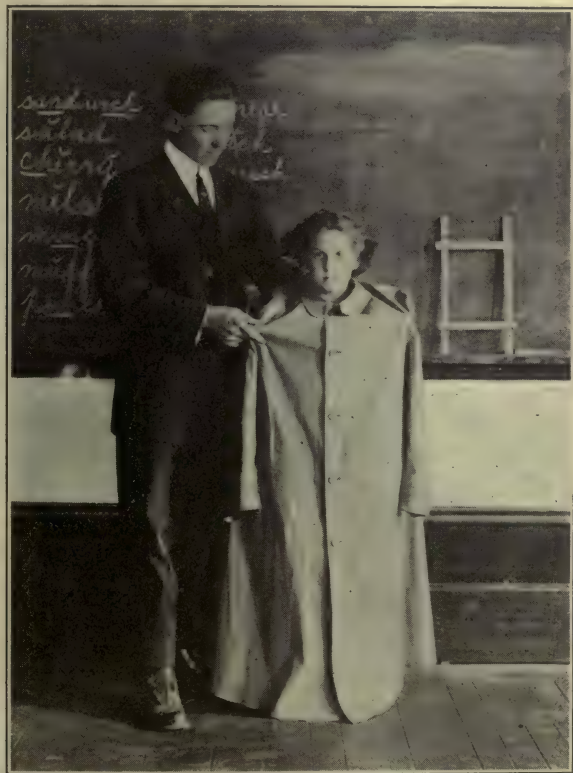


FIGURE 2

Finding Out Why We Sweat and Why We Bathe

HYGIENE OF THE SKIN

A study of the hygiene of the skin was taken up in a fifth grade class after the following plan:

The members of the class are provided with simple microscopes with which they made a study of the skin of the hand, noting its scaliness and the tiny spots from which sweat was seen to be escaping. Attention was called to the fact that when one is sweaty one can easily scrape off scurf from the skin. Some of this scurf was put on a suitable culture medium to see if germs might be shown to be present. The class had previously made an inductive study of germs and had learned that germs of decay thrive where there is foodstuff, and it is warm, moist, non-acid, and out of direct sunshine. In a few days the culture medium prepared and impregnated with skin germ, disclosed bacterial colonies easily seen with the naked eye. The class could, of course, readily understand why germs thrive on the skin of the body.

Some further studies were now made of the purpose of sweating. A thermometer bulb was lowered into a bottle of ether, its temperature read, the thermometer removed, and the falling of the mercury column noted as the ether was evaporating from the bulb. Careful questioning brought out the truth that evaporation is a cooling process, and this was made emphatic by pouring a little ether on the hand of each pupil.

The pupils were now each provided with a large rain coat or ulster of some adult generous enough to help the enterprise. Figure 2 illustrates how each pupil appeared, a little frame like the one shown on the blackboard ledge at the right having been used to get the coat to stand out as far as possible from the body of the pupil. The temperature of the room at the beginning of the experiment was about 68° F. but after the pupils had stood for about fifteen minutes the temperature within the coats was taken, showing a range of from 75° to 80° F. The teacher now went about the class and lifted each coat up and down vigorously so as to stir the air within completely but without admitting any new air. This of course served to break up the vapor jacket that had formed around the bodies of the children when the air was stagnant, and evaporation of the sweat was at once renewed, causing the children to become at once decidedly cooler. The rain coats were now lifted over the heads of each pupil slowly enough so that they got a chance to smell the previously confined air.

Out of it all the pupils drew inferences as to why we sweat, why ventilation is important (the two most important reasons, neither one of them having anything to do with carbon dioxide or oxygen) and why it is desirable to bathe frequently. Indeed it was satisfying to hear one of the most needy of the group boast to his fellows, a few days after, that he bathed every day now and that he felt "bully!"

One more illustration from a sixth grade class. Here the study was upon mosquitoes. The pupils were given each a glass of pond water in which there were a lot of mosquito "wigglers." Our picture (Fig. 3) shows the pupils engaged in the study. They noted the two stages of mosquito life there presented, and as it happened, the difference in the breathing position of the malarial and the common mosquito larvæ. Placing a piece of flat glass over the water in which the pond water was contained, and allowing the material to stand over night, they were in high glee the next morning to find adult mosquitoes flying about under the glass, both culex and anopheles. Out of all this there easily developed a keen interest in the life history of mosquitoes and from that a consideration of the best means to suppress mosquitoes and get rid of malarial fever. The children now went eagerly to the books to find out everything they could about mosquitoes. One boy, ordinarily indifferent, stole out from the schoolroom the regular text-book in hygiene and boasted to the rest of the class that he had already read all this book through.



FIGURE 3

Getting the Right Start in a Study of Mosquitoes

Other topics that have thus far been developed and presented to the various classes in hygiene are house flies, germs, the teeth, the mouth and feeding, drinking water, exercise, clothing, tobacco, alcohol, carbon dioxide, and oxygen. Interest has always been keen, and the classes as a whole have invariably voted hygiene to be one of the subjects they liked the best.

Better than all else, the hygienic teachings have taken hold of the boys and girls and have been reflected in improved habits and greater concern about the things that make for better living.

QUESTIONS OF HYGIENE PECULIAR TO EVENING SCHOOLS

BY

GEORGE E. SMITH

The Proceedings of former sessions of this Congress make no mention of Evening Schools; neither does a careful survey of the Evening School field show that it has profited, directly or indirectly by the activities of the Congress. The campaign for better health has not yet included the Evening School within its scope. One may only theorize as to the reason for this condition, so I shall leave it for the consideration of future Congresses as the first great problem of the Evening School as yet unanswered.

This paper appears to be a pioneer effort, so I shall not confine myself strictly to the topic as announced, but shall take the liberty of calling attention to any condition or problem of a hygienic nature which we of the Evening Schools feel this Congress may help to remedy, or solve.

On the supposition that the Evening School is but little understood, I shall take the time to show that it is a most important educational institution, worthy enough and, surely, needy enough to merit your consideration.

It may come as a surprise to some to learn that in New York State alone there were registered in the Evening Schools during the past winter, approximately 170,000 pupils, ranging in age from 14 to 70 years. Eighteen cities of the United States, with many cities omitted which were larger than those included, report 303 elementary evening schools, 53 evening high schools and 34 evening trade schools. This for the season of 1911 and 1912; the census for this year will far exceed these figures.

The attendance in evening schools is made up largely of pupils from the most thickly populated centers where questions of hygiene and sanitation are most pressing, but least likely to be worked out. Indeed it may be said of the night school pupil, "he has had to work out his own physical as well as his financial and social salvation."

The Evening Schools fulfill a purpose entirely different to that of the day school. They provide training along practically every line of human endeavor. As their value becomes better understood, they grow more and more popular, until now they are fittingly termed, "the schools of the people."

At the risk of seeming prolix I shall venture a few details: The Evening School takes the best of the immigrant population and makes of them capable American citizens, leaders of their less favored compatriots. In this capacity it becomes the greatest, if not the only influence which tends to solve the problem of the assimilation of the foreign element.

It takes the unskilled workman and converts him into the skilled mechanic while it raises the skilled workman to higher planes of efficiency. In this it is a potent influence in maintaining our national industrial supremacy. It takes thousands of girls and women whom the economic conditions of the times have left without experience or training along domestic lines and gives them that instruction in the arts and sciences of the household which will go far to preserve that bulwark of our civilization, the *home*.

Lastly, the Evening School opens wide the door of opportunity to *everybody* who aspires to better things; be he common laborer, clerk, mechanic or struggling student—those to whom Ambition came too late and those whose aspirations were crushed under the heel of Circumstance, all find Hope renewed in the Evening School. What institution then more helpful to the individual or more far reaching in its influence upon humanity at large?

And yet I am prepared to say that this institution, beneficent as it is, is falling far short of its duty to its individual pupils, is failing to grasp the splendid opportunities which it has to sow the seed of hygienic righteousness in the fertile soil which it has itself prepared.

What are the Evening Schools doing toward furnishing hygienic conditions under which the pupil can work? What are they doing to conserve the health of their pupils? Through their influence, are they spreading the gospel of Good Health to the thousands whom they might reach? We can give no definite answer to these questions, we can answer them at all only as we study the physical conditions as we find them in schools.

First let us see what provision has been made to safeguard the pupils from the spread of contagious disease, and the recognition and correction of disease or physical defects? A canvass of the State of New York reveals the fact that Medical Supervision is an unknown quantity in the Night Schools. "Why?" I shall leave it to others to answer.

The physical conditions which surround the Night School pupil—are they good or bad? First, as to the lighting. In the present day construction of school buildings, expert opinion is had as to the amount of window space; the direction, amount and intensity of the light, its reflection and absorption. But who can point to even a modern school building where the same care has been exercised in contemplation of

its use as a Night School? Housed as Night School Classes often are, in antiquated buildings where the lighting facilities are only a makeshift, I am safe in saying that the light is often simply atrocious. Where modern High School buildings are used for night school purposes or Grammar School buildings of modern construction are used, the report is often "satisfactory;" but I doubt if the expert would confirm the opinion of the layman. In this city, with a night school attendance of nearly 12,000, night schools have been in existence for thirty years; but it was not until this year that a committee of eye specialists visited the schools. Among the milder terms used in the report were, "awful," "impossible," "cannot be tolerated." I may say in passing that, as a result of that visit, the light in our Night Schools has been pronounced "satisfactory by those who are eminently qualified to know."

Although volumes have been written on the ventilation of the Day School the last word has not yet been said; but on the subject of ventilation in the Night Schools the first word has yet to be said. Do not suppose, my friends, that because a building has a sufficient ventilating system, the Night School classes must necessarily have good ventilation. Until we have adequate supervision of the Evening Schools, with power to enforce directions, the fans will not run, the windows will not be opened. And what is the result? Let this typical Night School class give the answer: Twenty to forty adults are seated in an ordinary class room, lighted by open gas burners. These people have just come from work. They have had no time to remove from their bodies the sweat and dust incident to the days toil. There is no adequate supply of fresh air from any source. What air there is is rapidly consumed and vitiated by the open burners and the lungs of the pupils add to this the emanations from twenty to forty bodies and you have a condition which habit only makes it possible to endure. It is little wonder that we find these earnest people dropping out as the winter advances.

Now add to this, the last straw of discomfort, by seating these adults in seats adapted to children and the burden is complete. Needless to say that it is hardly to be borne. Yet it is borne by many. Could the air be renewed and the tired muscles be relieved by frequent physical exercise the mental advancement surely would be more rapid and certainly the improvement which is made would not be counterbalanced by the physical deterioration which must result from adverse influences.

In the reports of some night school systems we find that two-fifths of the total enrollment has dropped out inside of twenty days. May not some of this falling off be due to physical conditions which render the pupil unfit for his next day's work? And those who remain, is it not almost a crime to subject these earnest patient seekers after knowl-

edge to the weariness induced by bad light, bad air, unsuitable seats, superimposed upon the fatigue of the day of toil?

Physical exercise, indeed, a complete system of physical education is considered an essential feature of the day school curriculum; but, as I have intimated above it is rarely found in the night school. If the conditions which I have just described exist, can we justify the absence of physical education on the ground that the pupils are older and the hours shorter in the evening school? But if further reason for its presence is needed we can find it in the daily lives of the pupils. All are toilers in the trench or the "sweat shop;" at the bench or the desk. As toilers they are prone to the deformities incident to the occupation. Where, better than in the evening school, can these adverse tendencies be checked or counteracted and lessons taught which will safeguard the pupil against their recurrence.

And here may well come in the whole subject of hygienic intelligence.

Millions are spent in what seems, sometimes, a hopeless effort to teach such practical lessons of hygiene and sanitation as shall make for good health in the densely crowded sections of our large cities. Boards of Health are storming the ramparts of Superstition and Ignorance; but are slow to find entrance to the home, especially that of the recent immigrant. Helpful coöperation is the thing essential, but the thing most often lacking. Indifference and suspicion meet all advances from whatever source.

But why rehearse the history of the crusade against Disease and Death? It is familiar to you all. All know how great has been the waste of time, energy and money. To be sure, progress is made and eventually, intelligence will triumph over ignorance, health will win the battle over disease—But oh, how slow! It would seem sometimes that where *one* gets the help he needs, *hundreds* fill the ranks of those who need. Is it because in an effort to succor the few the need of educating the many is lost sight of? Are we treating disease rather than teaching hygiene? Or is it the method of reaching the masses which is at fault? I make this statement without fear of contradiction. If the right method and medium were employed and one-tenth of the money now expended on hospitals were spent in a campaign of education on how to *keep* well, disease would disappear as does the germ of Tuberculosis in the presence of sunlight and fresh air. "Let there be light" then in the minds which have dwelt in darkness!

As to the medium through which to reach the masses, it is ready at your hand—the *Night School*. The soil is fertile, ready for the seed and the sower. Will you sow the seed of hygienic living in the minds and hearts of the Night School pupils, they in turn to multiply the seed a thousand fold and cast it broadcast among their own people?

Some one, from lack of knowledge, will say that the Evening School pupil has neither the ability to learn, nor the power or inclination to teach if he did learn. To such a one let me say that the Night School pupil is the first to seize and the most eager to hold any educational opportunity which he finds to his advantage. Witness, for example, our Vocational Evening Schools, crowded to the doors. During the winter, the 12,000 pupils of the Evening Schools of this city were told, in a series of thirty talks, of the prevalence of physical defects and preventable disease among children. They were told of this Congress, of the great and good people who make up its membership, that these people are coming here to discuss ways and means to prevent this unnecessary disease and death. Finally it was left to them to decide if they would help along the work of the Congress. It was a fifteen-minute story. It suffices to say that, as a result of these talks hundreds of dollars were raised to defray the expenses of printing the proceedings of this Congress that 12,000 people are reading the abstracts of articles here presented and are spreading the news among others of their race and language. Does this look like ignorance, inability or indifference?

The splendid report of Superintendent Shiels of New York City shows that there were registered in the Evening Schools of New York 24,483 Russians (mostly Hebrews), 5,459 Austrians, 7,575 Italians, 4,672 Greeks, etc.

Suppose these, the most intelligent representatives of their respective races, were enlisted in a movement against disease. Can anyone doubt the result? Make these people able missionaries of Good Health and you have enlisted a force which will ensure success.

How is this to be done, without diverting too much of the time and energy of Night School pupils from the direct purpose for which they enrolled?

"Where there's a will, there's a way." It's the purpose of this paper to arouse the "will," rather than prescribe the "way." Of course until School Boards, Boards of Health, Physicians, and those in charge of schools and classes, appreciate the possibilities of Night School instruction in hygiene, nothing will be done. Physicians and others must rid themselves of their conservatism. I am reminded, in this connection, of the eye specialist who objected to laymen being taught how to remove a cinder from the eye lest he do more damage than good. Everybody and particularly the class room teacher must be imbued with a sense of obligation and a sympathetic wish to help. Knowledge of fundamental subject matter is easy to gain; it is a different proposition to impart it.

When it comes to the field of more technical knowledge as for example, occupational diseases, shop sanitation; we must not forget that we

always have with us willing advisers, the sanitary engineer, the specialist, the experienced physician, men broad enough, wise enough, kind enough to help us.

Rid of its technical terms, the knowledge which we would teach, is within the power of every teacher to impart and within the ability of most pupils to learn.

A recent work, entitled "Hygiene for the Worker," will form the basic text of our work in Buffalo. If the lessons it teaches are thoroughly taught it will leave little to be desired in the way of information.

Any emergency or general hospital will, I believe, furnish a physician who will gladly give demonstrations and suggestions in "First Aid Work," at least such has been our experience.

Some of the most eminent men in the medical profession have freely donated their services, giving half hour talks, which closed the nightly session. It would be more correct to say that these "talks" were more properly clinics or objective demonstrations. State and local Boards of Health will be found ready to give a helping hand. Our local Board of Health illustrated the spread of contagious diseases with a moving picture machine.

Representatives of the Health Department, during the past winter, illustrated adulteration of foods, and food values, and the proper handling of meat and milk.

Capable members of the dental profession are always ready to give help on that most pressing problem "Oral Hygiene."

One of the most helpful talks on Food Hygiene was given by a member of the Faculty of the University of Buffalo.

New York City in its Department of Evening Lectures offers thirty lectures in First Aid Work, fourteen on general Physiology and Hygiene, and five on the spread of Tuberculosis.

So much for the resources at our command. Before substantial progress can be made, however, it must be understood that there should be some inspiration which shall beget a proper appreciation of what is due to the body, not alone as the "noblest work of God," but as a machine, one perfect in workmanship, wonderful in its adaptability to adjust itself to every need, yet just as susceptible as any other machine to injury from neglect and carelessness. A fitting illustration of the use and abuse of this machine might be had from two motors, the one in the hands of a careful driver comes into the shop after a year's work practically as good as new; the other through neglect is turned in, so much worthless junk.

I have outlined some essentials to a plan of instruction. Every city must deal with its own problem. I can only repeat, "Where there's a will, there's a way."

The last problem that I shall present for your consideration is the "Fourteen to Sixteen" year old boy, most of whom attend Night Schools, if at all, because a law still in force in some states, compels him to.

We hope eventually to make the Evening School attractive to these boys but in most cases unless he is set at Vocational Work, he is a nuisance to himself and the school.

This paper, already too long, will not attempt to deal with the problem. It is left as a suggestion, for future discussions.

To conclude, I would make a last appeal to this Congress to include the Night School within the realm of its activities: First, because such recognition will help the Evening School to come into its own as a generally recognized factor in education; second, because it will help toward the improvement of hygienic conditions of the schools, raise the plane of physical efficiency of its pupils, and render it possible for them to realize the ambition which induced them to enroll, and finally, we would ask for such support, encouragement and advice as shall make the Night School a power for physical well being in its community.

INSTRUCTION CONCERNING THE INSPECTION OF FOOD ANIMALS AND ANIMAL FOODS

BY

JOHN R. MOHLER

Many authorities share the opinion that the exercise of control over the food supply and the problem of the procurement of cheap wholesome food for the poor offer a wider and more promising field of public usefulness than a number of the questions which are at present receiving an undue amount of public attention. The careful sanitary control of our food is especially necessary in the case of animal food products, particularly meat and milk, which are most apt to carry infections and are readily decomposable. This subject of food inspection has so wide a scope that a description of the examination of one animal product, such as meat, will afford a sufficient illustration of the principles involved.

The protection of the public health as manifested by the regulations of the meat supply is popularly supposed to be quite modern in origin. In reality this subject is an old story, the telling of which began with Moses and was continued by the Egyptians, Phœnicians, Babylonians, and many others before the present era. From a perusal of the literature relating to this period it becomes apparent that in these early times the views held by the various tribes and nations regarding the examination of meats was as much dependent upon religious grounds, ancient prejudices and sacrificial observances as upon any sanitary or esthetic consideration. With the increase of industrial development during the middle ages regulations regarding meat consumption began to appear among the more modern European countries. It would be tedious to describe the growth of meat inspection in these various countries from the very primitive form which existed then to the scientific system based upon the firm foundation of assured knowledge which obtains to-day, and it is only desired to draw attention to the fact that a form of meat inspection existed from the earliest times, and that by a process of evolution which has gone on for centuries the condition of things has been arrived at which obtains to-day. But the achievements of the last decade entirely eclipse all that was done before, and reforms have been effected not only in the United States, but also in Germany, Austria-Hungary, Belgium, Holland and France.

The solid foundation of scientific meat inspection may be said to be the biological investigations of the meat measles and trichina, which were of such widespread interest that they gave the subject great

impetus. Experiments regarding the danger to man from the consumption of meat of tuberculous animals and investigations relative to the production of meat poisoning in man from eating diseased meat likewise showed the great public importance and necessity of such inspection as would eliminate these dangers. As a result of numerous investigations along these and similar lines, other countries have, from time to time, enacted laws governing the inspection of meats until at the present time legislation on this subject has been adopted by almost all the countries of continental Europe as well as by New Zealand, Canada and the United States.

It will be seen, therefore, that a healthful and wholesome meat supply is becoming more and more sought after, and in numerous places efforts are being made to control and thereby improve it.

The principles of meat inspection vary in different countries, depending upon the local conditions.

In the United States the inspection of meats is conducted by the federal government, by the state or by the municipality. Inspection by the government has gradually been extended and improved since its inauguration by the law of 1890, until at present the federal meat inspection law, which is enforced by the United States Bureau of Animal Industry, is as advanced a measure as could be desired, and is, perhaps, the most rigid and comprehensive of existing laws on the subject. Under this law meat inspection proceeds by logical steps, commencing with the careful antemortem examination of the animal, continuing with the inspection of the carcass while being dressed, the supervision of all meats used for curing, pickling, smoking, cooking or canning and finally with the proper, honest labeling of all meat or meat products.

The antemortem inspection consists in the careful examination of the live animals. This examination is made in the stock yards or in the pens or alleys of the establishments at which they are to be slaughtered. In the large stock yards doing an interstate business the antemortem inspection under the meat inspection law is reinforced by an inspection made under the quarantine laws, all animals entering the yards being inspected on arrival with a view to detecting contagious diseases and preventing their spread. When an animal is observed that gives any appearance of being unhealthy or unsound the inspector or his assistant affixes to its ear a numbered metal tag bearing the words "U. S. Suspect." Such animals are segregated and slaughtered separately from all others either before or after the regular killing.

The chief value of the antemortem inspection is in segregating the animals of suspicious appearance so that they may be given special postmortem examination, and also in detecting certain diseases, such as acute hog cholera, actinomycosis, acute febrile diseases, etc., in which

the antemortem symptoms are pronounced, while the postmortem lesions are sometimes very slight.

The postmortem inspection is much more important than the antemortem and is our chief reliance in passing on the health of animals and the wholesomeness of their carcasses. In most cases it is impossible to determine the nature or extent of disease in the living animal. This is especially true of tuberculosis. Animals are frequently found which have every appearance of being perfectly healthy and in good condition, but after slaughter are found to be very extensively affected with tuberculosis.

The postmortem inspection is made at the time of slaughter. In the large packing houses where the rate of killing is rapid the system of inspection has, so far as practicable, been adapted to the conditions so as to provide thorough and careful inspection without unduly obstructing the operations of the establishment. Visitors sometimes wonder how it is possible for the inspection to be done thoroughly when the slaughtering is done so rapidly. In the case of hogs, for example, the glands of the neck are common seats of tuberculous infection, and the disease is first looked for there when the head is severed. As the abdominal cavity is opened and the viscera exposed another inspector with practiced eye watches closely for the slightest abnormal appearance, and feels and lays open with a knife various parts in order that any obscure signs of disease may be detected. Upon observing the slightest indication of disease or any abnormality the carcass is "retained," that is, it is set aside, marked with a numbered tag for identification, and sent to a special place or room where a careful and thorough examination is made by another inspector to determine the proper disposal of it. By this means a much more thorough examination is possible than if the final inspection were made at the time of the first discovery of indications of disease.

Following the postmortem inspection there is a further inspection and supervision, covering all the various processes of preparing, curing, and canning meat food products of various kinds. This part of the work is done by men who are designated as meat inspectors and who have had special experience fitting them for such work. The object of this inspection is to prevent or detect any unwholesomeness which may occur or develop after the meat has passed the postmortem inspection, and also to guard against insanitary methods, adulteration, or the use of harmful chemicals or preservatives, and to enforce honest labeling. This part of the inspection applies especially to such products as hams, bacon, lard, sausage, oleomargarine, and cured and canned meats of various kinds.

As an additional safeguard against adulteration or the use of forbidden chemicals or preservatives, samples of the various products are taken from time to time and examined by laboratory inspectors.

Having seen that only wholesome meat is used and that it is prepared under clean conditions and without harmful preservatives, the inspectors go one step further and see that the package is truthfully labeled. Shoulders can no longer masquerade as hams, and products which formerly went under the names of "potted ham" and "potted tongue" must now be labeled "potted meats" of "potted meat food product."

The magnitude of the inspection is shown by some statistics covering the past six years, the period during which the new law has been in effect. In that time there have been inspected at the time of slaughter nearly 322 million animals. Of these there were condemned as unfit for food over 900,000 carcasses and nearly $4\frac{1}{2}$ million parts of carcasses, making a total of $5\frac{1}{2}$ million carcasses condemned in whole or in part. Nearly 38 billion pounds of meat and meat food products were prepared and processed under inspection, of which 141 million pounds were condemned on reinspection.

During the past year more than two hundred thousand whole carcasses of animals were condemned, besides 18 million pounds of meat which was condemned upon reinspection. The probabilities are that if there were no inspection a large proportion of the meat so condemned would have been marketed for human consumption, and as tuberculosis constitutes the chief cause for condemnation the direct relation of the meat inspection to the public health will readily be seen.

The standards of inspection are based on the best scientific knowledge of the present day and are sustained by the practically unanimous views of all the great scientists of the world who are experts on the subjects involved. Our regulations and practices are fully as stringent as those of any other nation, and under them much meat is condemned which in other countries would be passed for food.

It is estimated that about 60 per cent. of the total meat supply of the United States comes under the inspection of the federal government. Most of the remainder receives no inspection whatever, while a small proportion is subjected to some kind of inspection by local or state officers. For instance, the federal government is powerless to exercise any supervision over the meat that is slaughtered, prepared, sold and consumed entirely within a single state. For this class of meats, state inspection should be inaugurated, as has been done in Pennsylvania, and the work of examining such meats taken up where the government inspection leaves off. In fact, the federal inspection should be supplemented not only by the state inspection but by the municipal inspection as well, which would include the inspection of (1) the small slaughter houses which do only a local business; (2) the commission houses and sausage factories; (3) the retail butcher shops.

It is a duty which the state and municipality owe to their citizens

to establish a system of meat inspection that will afford adequate protection against diseased and unwholesome meats in order that all meat sold locally which has not passed the federal inspection will come under the requirements of an efficient local inspection system. The public must be able to secure the best as well as to avoid the bad. The great danger that menaces the consumer arises from uninspected meat produced in the numerous unclean and malodorous private slaughter houses so frequently found on the outskirts of most of our cities. To control the latter and to control them efficiently, it is essential that laws be enacted for the proper supervision of these establishments which kill at all hours of the day and night as inclination dictates or necessity demands. A far better law, and one which would receive the endorsement of all sanitarians, would ordain the abolition of these small buildings and the establishment of a public or municipal slaughter house, remote from the center of the city and its business section, and where a thorough inspection by an experienced veterinarian could be made of all animals at the time of slaughter.

The modern idea of the slaughter of animals is that it should form one of the regulated industries, and this feeling is due principally to the desire that nothing but sound meat should be offered to the consumer. It may be argued that sound meat can be produced in these private slaughter houses just as well as in public institutions, but this is certainly incorrect so long as the inspector is enabled to make only casual visits while during the remainder of the time the onus of judging whether a meat is sound or otherwise rests solely with the owner of the meat. If public officials are to have the responsibility it is only fair that the industry should be concentrated at certain points in municipal or central abattoirs, which are quite common and entirely satisfactory in Europe. Such abbatoirs under rigid, though rational restrictions, would be beneficial not only in facilitating the business but in promoting the sanitary interests of the city, since all the offal could be disposed of at once and all portions of the carcass not edible could be reduced to inoffensive articles of commerce. Furthermore, it is questionable whether any city could afford to employ the large number of officials that would be required thoroughly to supervise the inspection at the time of slaughter in the numerous, widely scattered establishments which at present exist in our larger cities. Any substitute form of inspection which includes merely the dressed carcass is unworthy of the name and is extremely delusive, since it gives a false impression of security to the consumer.

In this country we are beginning slowly to recognize the need of special training for various branches of the public service, including the inspection of food animals and animal foods. The time has come to demand trained specialists who shall devote their whole time and

energy to this particular phase of the public health protection. In addition we must insure them a tenure of office dependent upon efficiency gained by special training before they assume office, and not acquired solely as a result of their experience obtained at the expense of the public. In order to provide this training universities with the necessary departments must coöperate with various private or privately endowed veterinary institutions in giving particular instruction and extending their work in sanitation to help solve those problems which affect public health. Two persons should be concerned in this teaching—a meat inspector to teach the principles and practice of meat inspection, and a pathologist to teach the significance of various morbid changes. By efficient instruction in veterinary colleges and at certain stages of the teaching by placing the students in the field with those actually engaged in the work an ideal training could be provided. A lasting impression concerning the responsibilities involved in daily practice by such a demonstration can be had only by intimate contact with those who are specialists in that line, and the student will thus realize more clearly what is expected of him in his future career.

Therefore a corps of thoroughly trained veterinary inspectors is one of the most important links in the chain of any efficient meat inspection system. An inspector should be a qualified veterinarian having appropriate training for his specialty.

The government recognizes that it requires a high degree of skill to conduct this work, and it has therefore placed the meat inspection service under the civil service, and, further, it will admit veterinarians only if graduates of recognized veterinary colleges. In addition they are required to pass a civil service examination and must, furthermore, submit to the Danish system of serving a probationary period of six months before obtaining a permanent appointment.

The magnitude of this work is indicated by the fact that at present there are 993 veterinarians employed by the Bureau of Animal Industry alone in the various meat establishments in 222 cities. A smaller number of veterinarians are also engaged in the meat inspection service of a few states and a constantly increasing number of cities and towns.

In some cities the inspection is enforced by laymen such as butchers, cattlemen, or men even more disconnected with the practical part of the work, and the results are seriously handicapped on account of their inability to recognize lesions, which would at once appeal to one trained in the anatomy and physiology of domestic animals, and in the relationship existing between their diseases and human health. If an adequate reason for state or municipal inspection exists and no one of intelligence will deny it, this should possess equal strength for having the law intelligently and efficiently enforced by capable veterinarians skilled in the knowledge of sanitary science.

AN EXPERIMENT IN STUDENT CONTROL OF SCHOOL SANITATION AND HYGIENE

BY

G. W. HUNTER

The great elementary and secondary schools of New York City form excellent experimental ground for much needed coöperation between pupils, teachers and civic authorities to obtain safe and sanitary conditions of life during the time that the persons involved are in the school buildings. The city may supply the plant, sanitary and well equipped, it may safeguard the water and food supplies furnished to pupils and it may send teachers into the work temperamentally and scientifically fitted to do the work of instruction for sane and sanitary living. But if the student body does not coöperate with the teaching staff and the civic helpers without the school then that school building and its surroundings will be as hopelessly unsanitary as if the message of the individual drinking cup and the individual towel had never been preached.

An attempt to obtain coöperation, successful to a surprising degree, has been tried by the writer in the De Witt Clinton High School. This school, one of the largest boys' schools in the United States, is ideal for such an experiment because of its peculiar environment and its cosmopolitan clientele. The building, a splendid example of modern school architecture, is located on the border of one of the most unsavory localities of the city, an area where the gang element in its worst form runs riot and where race battles are not uncommon, even in broad daylight. The streets near by are offensive and ill kept, the one redeeming feature being the close proximity of the school to two large hospitals. The school building is used day and night practically throughout the year, housing a great day school, a night school, a lecture and a recreation center. As the focus of such activities perhaps five thousand persons daily enter its doors. Of the student body over 75% are of foreign born; in most cases the migration having been very recent. Most of the boys, especially the "east siders" are well behaved and anxious to learn but have never had the opportunity in their home surroundings to know what real sanitary and hygienic conditions are. Consequently, in spite of watchful teachers and an efficient janitorial staff the halls, rooms and in particular the stairways and lunch room often presented an appearance that was far from sanitary.

Each half year, in September and again in February, nearly 800

new pupils, fresh from the many schools of the various parts of the city each with their own standards, enter the portals of the school. It was from these entering classes, aliens, without any idea of what the school and its activities stood for, that we experienced the most difficulty. No conventions bound them, school traditions were as yet unknown and the preaching of their teachers and the practical work of their biological and hygiene training had not yet begun to bear fruit. A trail of torn papers, chalk dust and cast-off luncheon came to follow certain of these first term classes.

Then came the thought, if these boys are unwittingly the offenders against the decency and self-respect of the school why not make them sow the first fruits of a propaganda against this lack of consideration of others. Calling together half a dozen of the better element from among the incomers a plan was evolved, the details of which follow:

Boys in the school, for convenience in distribution, are grouped in sections of about thirty-five pupils, each section being assigned to a given home room in charge of a single teacher who acted as their advisor and to whom they recited in one subject. In this home room the section had most of its study periods, there they discussed the affairs which were solely section matters, activities of various sorts were organized there. Whatever *esprit de corps* the section possessed arose from the fellowship aroused by their meeting together in the morning or after school in their home room. Here was evidently the place to strike first. So notice was sent out of a meeting to which each first and second term section were asked to send delegates. These delegates became the nucleus of what was later known as the Sanitary Squad of the De Witt Clinton High School.

At this juncture we evoked the aid of Mr. Reuben Simons of the Department of Street Cleaning. This gentleman had done work of a similar nature among much younger boys in the elementary schools and knowing boy nature came forward with the offer of badges to be used by the squad members as a distinctive mark of authority. Committees were then formed, officers elected and the work of the organization began, with an executive committee, an improvement committee, the duty of which was to suggest improvements in and about the building, a street committee to police the street during the lunch periods, a hall committee, whose members policed the halls at all hours of the day and brought offenders against law and order to justice, a lunch room committee, whose onerous tasks were to ultimately "clean up" the lunch room, and finally a social committee, whose business it was to provide the programs for the meetings held every Tuesday afternoon. The officers of the club were a president, vice-president, secretary (for there were no dues) and a faculty director. The faculty director chose

a student assistant director. These officers made up an executive council and in reality directed the interests of the squad in the right directions.

One of the first useful activities of the squad was to draw up and have printed a set of suggested rules of conduct. These printed notices were posted in every room in the school building and on all bulletin boards in the halls and lunch room. Then, with the aid of large stencils signs were printed, which were placed in the lunch room and in the halls. These signs reminded the students that the cost of the lunch furnished depended, in the long run, upon coöperation between school authorities and the student body. A copy of the bulletin and of some of the signs follow, to speak for themselves:

THE SANITARY SQUAD—ITS PLACE IN THE SCHOOL

The sanitary squad is formed from among boys now taking biology. These boys realize the need of more sanitary and pleasant conditions under which to work and to live here in the school building. They wish to help make this school more livable and attractive. WILL YOU coöperate with THEM by living up to the suggestions which follow?

Do not spit on the floor or on the stairways. It is a dirty habit. Besides it may give your neighbor your cold or something worse.

Report at once to the janitor and to Mr. Hunter all toilets or urinals that may be out of order. Carelessness in the toilets causes unpleasant odors in the halls.

Do not throw chalk on the floor. Chalk grimed into the floor makes more work for the janitor. Besides it is a severe throat irritant and helps make bad throats worse.

Remember that there are waste baskets in all the rooms. Don't use your desks as a repository for waste paper, it collects dust and breeds disease.

Help to keep the building neat and clean by picking up paper or other scraps and putting them in the proper receptacles.

In using the faucets do not put your lips to the spout. You may thus contract disease from some other boy.

Observe the common rules of decency in the lunch room. Your neighbor may not be used to having litter or gym slippers on the table, even if YOU are. Show HIM some consideration.

Do not mar the furniture or the walls. Remember that it all comes out of your pockets in the long run. GET YOUR MONEY'S WORTH OUT OF YOUR INVESTMENT.

Report to Mr. Hunter all matters which you think could be bettered in the lunch room. Remember that the caterer is doing his best and would be glad of suggestions to do better. ALSO REMEMBER INCIDENTALLY THAT THE PRICE OF EVERY PLATE THAT IS BROKEN AND EVERY PIECE OF SILVER THAT IS SLIPPED IN THE OTHER FELLOW'S POCKET COMES OUT OF YOUR POCKET. LOW PRICES IN THE LUNCH ROOM COME WITH MUTUAL COOPERATION.

The work of the squad was at first directed toward bettering the conditions in the lunch room where over 2,500 boys were fed almost every school day. Then, widening their circle of influence, they took

charge of the halls and rooms all over the building and finally the condition of the streets adjacent to the school was taken in hand.

During the recent spring "clean up" campaign against dirt, waged by the civic authorities, the boys personally took charge of the distribution of circulars in localities that they could cover. Several large meetings were held to advertise the reasons for this campaign, the last meeting being held in the auditorium of the school and attended by over 1,500 boys. This last meeting was addressed by Dr. MacMillan, the director in charge of the clean-up campaign for the city.

But the work of the squad was by no means all plain sailing. Not all boys who joined the squad proved to be trustworthy, for it was a hard matter for a thirteen year old boy to see the ethics of picking up another fellow's leavings. Sometimes open rebellion on the part of the boys who were required to do clean-up work by squad members made matters rather difficult for the director to untangle. Boys of the upper classes, who were at times careless, like all other young men, resented being asked by a freshman to clean up anything, even if they did cause the trouble. So a "strong arm squad" came as a natural evolution from work in the lunch room where conditions were unusually trying. On this squad only large boys, with a fair amount of tact, were allowed to serve and it was considered to be an especial honor to attain this position. The usual method of procedure on the part of a squad member who saw a schoolmate throw something on the floor was to ask him to pick it up. If he refused he would show him his squad badge and again make the request. If this did not bring the required response the squad member would take the name of the boy and report him to meet the director at the court held every afternoon after school. Sometimes the getting of the offender's name would be a difficult task and might mean trailing the boy to a recitation room where a teacher would require the name to be given.

Every afternoon, in the office of the director, court was held. The director occupies the chair, the assistant director acting as the prosecuting attorney. The case is first stated against the reported offender, then he is allowed to make his defense, witnesses are then called for the prosecution to rebut any false statements that the prisoner may have made and finally the director pronounces sentence. This may merely consist in a reprimand with an invitation to attend the next meeting of the squad to see what they are doing; it will be clean-up work, under supervision of a squad member if the culprit is guilty and it may be, in extreme cases, a visit from the parents or a week or two in the tardy room, an after-school penal colony, which houses the careless or vicious members of the school community.

What is the result of the year's experiment? Can we say that we had

changed the school at the end of the year? Yes and no. At the beginning the attitude of the student body was that of a critical, non-sympathetic and often directly antagonistic body of scoffers. But little by little, as they saw the boys of the squad devotedly working for the common good, unmindful of the gibes of the crowd, a change began to be felt. Older boys, who at first were openly troublesome or who made fun of the squad workers, began to take an active interest and to even appear at meetings. One body of older boys, of their own volition, formed a hygiene club, procured lecturers and began actively to coöperate with the younger fellows. Best of all as faculty recognition and the notices of a favorable nature began to make their appearance in the school paper the student body commenced to wake up to the fact that it was pleasanter to have their surroundings clean. The lunch room, which in former days, after the lunch period, was a disorderly chaos of torn papers, half eaten fruit and spattered odds and ends of schoolboy lunches became really livable, so that after 1,500 boys had eaten, another relay of like size may be sent to the room almost without touching the room or its contents. The halls and most of the rooms are now kept in fairly good condition in spite of the occasional dirty or careless boy. But best of all is a spirit, a subtle something that has crept into the school as a whole. In place of the former selfish individualistic attitude which was so characteristic of the student body the De Witt Clinton student is beginning to think of the other fellow and his rights; he is beginning to understand that sacrifice for the right is to be desired and he is learning the best lesson of the future citizen—that of coöperation with authority for the common good.

PROGRESS IN DEAF EDUCATIONAL WORK SINCE THE THIRD CONGRESS

BY

MACLEOD YEARSLEY

It is a very useful thing to pause occasionally and take stock, a proceeding founded upon sound commercial principles. The occasion of the Fourth International Congress of School Hygiene affords an excellent opportunity thus to consider what progress has been made with regard to the deaf child since the completion of the Third Congress held at Paris. I have, therefore, decided, as my contribution to the business of the Fourth Congress at Buffalo, to offer to the section dealing with the treatment of Defective Children, a short summary as to the progress of deaf education in Great Britain and to indicate the lines upon which further developments should be made.

Progress has been in three directions: Classification, Early Education and Prevention.

Classification. From time to time, numerous papers have been written and discussed upon the classification of the deaf child. At the Conference of Teachers of the Deaf, held at Manchester in July, 1911, papers were read by Dr. Kerr Love upon the Medical Inspection of Deaf Children and by myself upon their Classification. The conclusions and recommendations offered in the former were:

1. The medical inspection of elementary school children as at present carried out is doing some good, but its effects are much stultified by the facts that treatment is seldom carried out and that school children are very poorly housed.

2. Attached to every institution and day school for the deaf should be an aural surgeon, who should examine all children admitted, and who, in a properly equipped room, should carry out such treatment as cannot be done at home.

3. All teachers, whether of the deaf or of the hearing, should be instructed in the methods of testing for deafness, by means of the human voice and of whispered speech.

4. Whilst legislation for the extinction of congenital deafness does not seem practical at present, much may be done towards the diminution of congenital deafness by the permanent segregation of the mentally

defective deaf. The study of congenital deafness with a view to preventive treatment, and, if necessary, legislative action, should be assiduously carried on.

5. Until deaf children are classified, no important advance in the application of methods of education can be expected.

In my own paper, I laid stress upon the importance of studying deaf children individually, dividing them into four classes—the slightly deaf, the semi-deaf, the very deaf, and the defective deaf—and pointed out that, of the first, the very slightly deaf could be educated in the front row of a hearing class, those more deaf, but unfitted for a deaf school, in special “hard of hearing” classes. Such hard of hearing classes being established in addition to the ordinary hearing school curriculum, being held in hearing schools and in charge of visiting teachers of the deaf.

Classification has been fairly advanced in Great Britain for the past three years, and in London I have succeeded in getting at least one “hard of hearing” class established by the London County Council.* This class has been conspicuously successful and we are on the eve of establishing others, which should not only be equally valuable in educating those children who are too deaf for hearing classes but are unfit to mix with very deaf or totally deaf children, but should relieve the deaf centres by affording more accommodation for those children suitable for the latter.

Taking next the matter of the *early education of the deaf child*, much still remains to be accomplished. At the last Congress, I presented a paper on this subject in which I urged, for reasons which may be found therein, the physiological education of the deaf child at the age of three years. Since then, there has been a noticeable tendency to allow children to enter deaf schools at an earlier age, a tendency which has met with considerable success as regards the efficiency of their education. In some parts of Scotland, nursery classes have been inaugurated, and in several provincial towns classes for young deaf children have been founded. In this respect, nevertheless, the United States yet leads the way. In Great Britain, however, the legal age for the compulsory education of deaf children still remains at seven and, until the education authorities can be led to see the great importance of earlier education of the deaf and legislation has been brought to bear, enlightened deaf educationists will remain at a disadvantage. Unfortunately there is still a faction in Great Britain (fast dwindling, it is true) of those who would make the deaf a class by themselves.

*Since this paper was written, two more such classes have been established.

Prevention. In the department of the prevention of deafness the past three years has seen much activity. The establishment, somewhat on the lines of the famous Volta Bureau, of a National Bureau for Promoting the General Welfare of the Deaf has been an epoch-making event. Its advent is owing to the munificence of Mr. Leo Bonn and his nephew Mr. Max Bonn. An important department of its work is this question of prevention. Under its auspices have been given three valuable lectures by Dr. Kerr Love, marked preëminently by patient research and practical suggestions. In Glasgow, a movement is on foot to put into practice the suggestions thus made, whilst the Bureau is urging upon the London County Council the following provisos, drawn up by its medical committee:

(a) The prevention of the diseases which cause deafness by:

1. Notification of all forms of meningitis.
2. Notification of all cases of congenital syphilis and facilitation of treatment of mother and child.
3. Improvement in hygiene, housing, and feeding of children in the first years of life.

(b) Better management of ear disease when it occurs, by:

1. The appointment of an otologist on the staff of every fever hospital.
2. All aural school clinics to be under a specialist, or specialist supervision.

At the Health Congress held in London in June, 1912, I read a paper upon the Prevention of Deafness, in which I urged, among other things, lectures to teachers and mothers. These have been put into practice by lectures to teachers on the Hygiene of the Ear and Nose, under the auspices of the London County Council, and lectures to mothers have been given in several of the Metropolitan Boroughs during the annual "Health Week."

Further developments in the care and education of deaf children must be made in the following directions:

1. More extended coöperation between the medical and the teaching professions.
2. The more extended establishment of systematic teaching of hard of hearing children in "hard of hearing" classes.

3. Legislation for the earlier education of the deaf child and for keeping him to a later age under the supervision of his teachers in advanced schools or evening classes.

4. The prevention of deafness by means of such methods as suggested above.

5. More extended research into the primary causes of congenital and acquired deafness in children.

6. The rousing of the medical profession to a greater appreciation of its responsibilities to the deaf child.

POR LA HIGIENE ESCOLAR Y POR NATURA

POR

OSCAR UGARTE

Sr. Presidente, señores Congresistas:

Para realizar con éxito la delicada labor pedagógica, nuestra principal atención no debe concentrarse dentro de los muros de la Escuela: si ha de ser nuestra misión completa y nuestras tareas han de constituir un verdadero sacerdocio, no debemos perder de vista al alumno fuera del recinto escolar; y acaso nuestra dirección deba decidir los actos del niño más ajenos al aula, en su casa, en la calle, donde quizá no pese sobre su conducta muchas veces ni la severa vigilancia de los padres que saben serlo. De poco sirve la más cuidadosa labor del maestro dentro del aula, si influencias malsanas la contrarrestan fuera.

Nuestras predicaciones se estrellan contra poderosas manifestaciones de ese influjo, hasta el extremo de que la más inquebrantable fé tiene á veces que presidir nuestras sentencias para que en ese instante un desalentador pesimismo no invada nuestra mente pensando que acaso en aquella cabecita donde tratamos de penetrar, bullen ideas contrarias y firmemente arraigadas, que ha inculcado la perversión moral en dorada forma, con criminal explotación varias veces y regocijo otras, en el contacto con mayores despreocupados ó malvados que contaminan esas pequeñas almas.

Existen serios peligros que este Congreso pudiera remediar, sin que pretendamos sino hacer más efectivos, propósitos que se alientan en muchos países y algunos de los cuales han cristalizado en saludables leyes; pero que en otros apenas han salido de algunos cerebros muy contados que no se atreven ni á exteriorizarlos, temerosos hasta de la burla de una inmensa mayoría ciega que no se dá ni aproximada cuenta de que sigue la misma pendiente de otros pueblos inutilizados para la vida nacional progresiva, por carecer de ciudadanos de vigor físico é intelectual, por consecuencia forzosa; capaces, por tales razones, de encauzar la marcha de su país, dentro de sus esferas de acción, hacia la cúspide de la civilización.

No se nos oculta que la influencia moral de que hablamos abarca una grandísima extensión y tiene diversas fases; mas hemos de fijarnos en las que revisten tan gran importancia que seguramente sus efectos bastan á obstaculizar la salud del niño por un lado y su hombría de bien por otro; haciendo, a pesar de los esfuerzos de una pedagogía celosa y competente, -triste es confesarlo- ciudadanos enfermizos que, además,

lejos de honrar á la patria con su conducta, como pretendía nuestro sistema, son vergüenza de la tierra en que nacieron.

Pase que nuestra influencia no llegue en ciertos casos hasta el mismo hogar del niño, donde natural es que se sobreponga é impere la voluntad y algunas veces los malos hábitos paternos: este inevitable obstáculo con que tropieza nuestra empresa es importante. Pero no olvidemos otros poderosos medios con su ambiente en la calle. que, modificando las tendencias perjudiciales del niño, pueden hasta operar rectificaciones en la conducta de los mismos padres; contribuyendo esta circunstancia a acrecentar aun más la trascendencia de las medidas que respetuosamente proponemos á este *Congreso*.

¡Y qué mayor gloria para nosotros que contribuir á esta regeneración física y moral, no ya de nuestra infancia, sino de nuestras familias! No hemos de referirnos en este trabajo á los vicios ilícitos y demás faltas relacionadas, que castiguen leyes en vigor, aunque su exacto cumplimiento deje mucho que desear y nos obligue la indiferencia de los llamados á imponerlas, á pedirles que cumplan mejor con sus deberes en lo que les corresponde de esta delicada tarea que prepara á los ciudadanos de mañana; sino á recreos y extralimitaciones infantiles que, no obstante sus horribles consecuencias, no son castigados por ninguna ley, y afectan las siguientes formas:

El juego.

La bebida.

El tabaco.

El espectáculo impropio.

Las postales, libros y periódicos obscenos.

Respecto al juego no nos esforzaremos en reclamar, ni mucho menos, la prioridad en su condenación: es tan viejo censurarle como el mismo vicio. ¡Ojalá lo fuera también un bien sentido propósito de extirparlo para fortuna de la humanidad! Sólo proponemos la prohibición de aquellos mismos juegos lícitos que no son propios de la infancia, como la baraja, el dominó, el billar, & &. y excitan las pasiones y el sistema nervioso.

A los daños morales del juego hay que agregar los gravísimos contra la salud del niño, tratándose de la bebida, causa de tantas enfermedades, entre ellas la terrible tuberculosis. Por esta razón se debe evitar que las criaturas cuya vida está en nuestras manos, puedan ingerir bebidas alcohólicas, como sucede hoy con lamentable frecuencia en establecimientos, entre cuyos dueños suele haber explotadores sin conciencia.

Del tabaco y sus desfavorables, aunque más tardías, consecuencias para el niño, sometido al envenenamiento de la nicotina, así como otras enfermedades; podríamos citar la milésima parte de lo que se ha escrito, y nos bastaría para convencer de su error á los que estiman ese vicio completamente inocente. Con eso conseguiríamos, por lo menos, que, aceptado en el hombre, se persiguiera tenazmente en los menores, no permitiendo que se les venda la hoja de Nicot en ninguna de sus formas industriales.

Y llegamos á otra de las plagas de la niñez: los cines con vistas desventajosas para una propaganda higiénica saludable, y sembrando algunas veces también el espanto y el terror que desequilibran el organismo; cuando muy bien pudiera servir el espectáculo de que se trata para encaminarla por una senda harto favorable á su sistema nervioso, lo cual es posible conseguir procurando, como en ciertos países, que haya salones cinematográficos, ó días especiales, para públicos infantiles. Así como también debe impedirse la entrada de menores en los espectáculos, en todos los espectáculos que puedan perjudicar su salud al mismo tiempo que su moral.

Por último: libremos al alumno de la arrolladora invasión de tarjetas postales, libros, periódicos, &. obscenos; a lo menos, con asuntos que despiertan pasiones e ideas peligrosas al desenvolvimiento del espíritu infantil en su camino pausado, por necesidad, hacia la edad del hombre; y, por tal motivo, á la marcha normal de su naturaleza. ¡Cuánto daño hacen á nuestra ímproba labor de orientación de tales espíritus débiles hacia fines altos, nobles y saludables, esas postales y libros &., deshonestos, que en las pequeñas manos deslizan comerciantes u otros elementos depravados que gozan salvajemente mostrando a los ojos de esos pequeños seres inconscientes, hasta las escenas más bestiales de la pasión, ora en figuras, ora en escritos; o ya situaciones, relatos que pueden trastornar moral y físicamente, arrastrándolos a la pérdida de la misma vida!

Por las razones expuestas, con objeto de librar al niño de los peligros enumerados que dificultan el éxito de nuestra labor higiénica educadora y teniendo en cuenta que se trata de propósitos que han de influir tan favorablemente en el porvenir del discípulo como factor de una sociedad más saludable y mejor preparada para el cumplimiento de sus deberes cívicos; tengo el honor de proponer al respetable *Cuarto Congreso Internacional de Higiene Escolar*, se trasmita copia de este trabajo á las Cámaras Legislativas de los Gobiernos representados, rogándoles, respetuosamente, que, por ser una medida que prestará grandes beneficios a la humanidad, con el propósito de coadyuvar a un triunfo más efectivo

de la Higiene Escolar y para castigar severamente las faltas objeto de esta proposición; voten leyes con el siguiente articulado (o parecido) propuesto por el autor de este trabajo al *Primer Congreso Pedagógico de Cuba* celebrado del 15 al 18 de mayo último, y aprobado por éste:

ARTICULO 1°. A todos los comerciantes, industriales o ciudadanos responsables de la compra ó adquisición de tabaco, en cualquiera de sus formas industriales, por menores; se les impondrá una pena no menor de treinta días de prisión correccional.

ARTICULO 2°. A todos los responsables de la compra o adquisición de bebidas alcohólicas en general, por menores; una pena no menor de sesenta días de prisión correccional.

ARTICULO 3°. A los responsables de la compra o adquisición de dados, fichas, barajas, &., o cualquiera objeto de juegos que no sean puramente infantiles, por menores; y á los dueños de establecimientos, &., que consientan á dichos menores tomar parte en los juegos, aunque sean lícitos; una pena no menor de noventa días de prisión correccional.

ARTICULO 4°. A los responsables de la compra o adquisición de postales, libros, revistas, &., con asuntos inmorales, por menores; una pena no menor de ciento veinte días de prisión correccional.

ARTICULO 5°. A los empresarios o ciudadanos responsables de la presencia de menores en cualquier espectáculo inmoral; una pena no menor de ciento ochenta días de prisión correccional.

ARTICULO 6°. Se tendrá por causa agravante de la falta el hecho de ser padre o tutor del menor.

SESSION TWELVE

Room C.

Monday, August 25th, 2:00 P.M.

FATIGUE AND NERVOUSNESS IN SCHOOL CHILDREN

D. P. MACMILLAN, Ph.D., *Chairman*

DR. J. W. PUTNAM, Buffalo, N. Y., *Vice-Chairman*

Program of Session Twelve

D. P. MACMILLAN, M.B., Ph.D., Director Department of Child Study and Educational Research, Chicago, Ill. "Some Important Factors Preventing the Normal Growth and Development of Pupils in School Life."

HUBER WILLIAM HURT, B.S., M.A., LL.D., President Lombard College, Galesburg, Ill. "The Hygiene of School Programs."

E. HERMAN ARNOLD, M.D., Instructor Orthopedic Surgery, Yale University; Director New Haven Normal School of Gymnastics, New Haven, Conn. "The Effect of School Work on Menstruation."

DE WITT GILBERT WILCOX, M.D., President American Institute of Homeopathy; Professor of Gynecology, Boston University School of Medicine, Boston, Mass. "The Physical Effects of Written Examinations Upon School Children."

MARY CRAHAN, Teacher of Speech Improvement, New York. "Development of Plans for the Correction of Stuttering and Stammering in the Public Schools."

DR. JOSÉ DE JESUS GONZALEZ (de León, Gto), México City. "Investigaciones sobre las Causas de la Inatencion de los Niños."

Papers Presented in Absentia in Session Twelve

(Read by Title)

TH. ALTSCHUL, M.D., Prague, Bohemia. "Die Frage der Geistigen Ermüdung der Schulkinder."

MARX LOBSIEN, M.D., Kiel, Germany. "Einfluss der Antikenotoxin auf die geistige Leistungsfähigkeit der Schuler."

WOLFGANG WEICHARDT, M.D., Professor University of Erlangen, Germany. "Neuere Chemische Forschungen in ihrer Beziehung zur Schulhygiene."

FRIEDRICH LORENTZ, M.D., Berlin, Germany. "Die Biologischen Grundlagen der Schulerermüdung."

LEON LIEBERMANN DE SZENTLÖRINCZ, M.D., Professor Royal University, Budapest, Hungary. "Gibt es in den höheren Lehranstalten eine Überbürdung?"

SOME IMPORTANT FACTORS PREVENTING NORMAL GROWTH AND DEVELOPMENT OF PUPILS IN SCHOOL LIFE

BY

D. P. MACMILLAN

We have heard much of the furore created in our parents' time by the publication of *Darwin's* epoch-making work on the Origin of the Species, especially about the application of his working principle to mankind; and recently the interest has been rekindled by the scientific and popular awakening in eugenics, but it is obvious that there is yet to be written the equally important correlate to all this in human affairs or the evolution of environments, to which hygienists must address themselves.

Inasmuch as it has commonly come to be understood that child hygiene, in its widest consideration, is the name of all these activities, conditions and influences that insure normal growth and development in normal initial material, it is manifestly impossible to present data on all its phases or discuss its many meanings and implications.

Moreover, because hygiene is as broad and deep as life itself, we are reminded that besides the complexity of forces there is such a tangle of inter-relations between the child organism and the influences that impinge upon it, that it is well nigh impossible to deal with the development of any one arc or segment without taking into account the forces at work in its whole history—immediate as well as remote. Even the hygiene of any one epoch or period of school life cannot be discussed at its basis without some survey, or critical analysis of preceding states and conditions of living.

Our topic raises for us the negative aspect of this whole subject, namely, factors preventing normal development, or the unhygienic states and conditions that handicap in the beginning, thwart in the process, and ultimately stunt latent powers and possibilities. But before we know unhygienic conditions and unfavorable growth, we must have some definite information concerning normal growth and favorable opportunities that insure it. It is perhaps unwise to state that positive information antedates the negative, for in some scientific fields of inquiry they receive simultaneous consideration and progress together; in other lines of research, indeed, the direct study of the abnormal takes precedence both in the order of time and importance over the investigation of the normal, or rather the normal is guessed at or

inferred in terms of relative degrees of minimized or undiscoverable abnormalities.

This characterizes, in a general way, the history of much of the work in the study of children. Needless to say it sets before us the great desirability of direct study of the normal child organism and normal environment, all of which may be termed the great problem of the scientific study of children of modern times. As a step in the direction of constructive work, and necessarily preliminary to the study of abnormals and variations in groups, the Department of Child Study and Educational Research of the Chicago Board of Education some fifteen years ago began to investigate normal groups of children and, profiting by the preliminary research and findings, both of Dr. Bowditch in 1878 on the school children of Boston of foreign birth and first generation American parentage, and of Dr. W. Townsend Porter with the pupils in the schools of St. Louis, Mo., the effort was made, in examining Chicago pupils, to eliminate the palpable home variants and to select school children coming from homes of comfort of second generation American parents. This standardization of norms was undertaken by us both on the physical and mental side and all our subsequent studies of individual cases or groups have applied these measuring-rods, and in turn amplified them. Much remains to be done in correlating intimate and vital changes within the organisms with outward and palpable variations, or indices of the same, as well as in bringing out the inter-relations of the status of special groups of children with different environmental influences. There are, however, requirements for insuring health and normal development common to all types of children and to these we limit our discussion, or rather to their opposites, the deterrents to normal growth and functioning, the states that should not be and the conditions that should not prevail.

There are many children who are hygienically handicapped from the beginning of life. First, the chain of heritage is weakened in some links, and of course, this goes back to unhygienic conditions and influences. Children come into the world with incipient nervous disorders, which environmental factors early transform into overstimulated or understimulated nervous systems.

Parents for many generations back have not known the first principles of right living, in which, though few have been willfully perverse, many were innocently ignorant, and it is to be noted that in the long run this affects the potency of the child in untold ways, although influences are most easily seen in the nervous mechanism.

We are commonly led to remark that such a child was "born tired" and this is frequently true in its original meaning. It is customary always in our examinations of children to find out from the parents

and others the line of family health, diseases, disorders, and defects. Sooner or later the hygienic living and teaching of school life will reach back to influence these so-called remote factors; but at present the evident fact remains they are deterrent factors in the original datum or material, and for hygiene they must be reckoned with.

Then, again, diseases in early years, are found to be associated in the child's life with unhygienic states. Right living through proper surroundings and teachings will ultimately make the so-called "inevitable children's diseases" a mere matter of curious history in child hygiene.

Further, among these must be classed accidents to the child's health and person, although indeed one advantage is often apparent in that very frequently these at once arrest the attention of parents and guardians to at least remediable and recoverable cases so that more is done for them than even for their more fortunate companions. In this connection, of course, any discussion must take into account the desirability of considering cleanliness of family life, inadequate and appropriate clothing for all kinds of activities, as well as purity or impurity of the air breathed in cramped and darkened home quarters; but above all we must begin with diet, rest periods, and educative muscular activity.

The most potent, because the most vital, constant, and controllable during the periods of infancy and childhood, is the dietary of the child. The food provided may not be sufficient and this reaches out to social economics; it may not be properly balanced and adapted to growth needs in general or in particular to the needs of the individual child's system; it may be irregularly partaken, and this is dependent to a large degree upon the habits of the home; it may be poorly selected food, cheap, old, decayed, and is very frequently unhygienically cooked. Finally, as so often occurs, the children are not educated to eat properly. The early education in right habits in all matters of diet lies at the basis of a nation's advancement.

In our daily examinations of older children, I constantly meet this factor of poor feeding and improper dietary associated with our findings of inability to carry school work or unfitness to continue the strain of intense group instruction which our schools provide. Certain aspects of this problem in Chicago we seek to counteract in a constructive way by the provision of penny lunches for the necessitous on the one hand, and on the other by the establishment of dental clinics and encouragement of tooth brush brigades, as well as by the indirect instruction and example coming from the examination and correction of physical defects; all of which attempts to remedy the effects of improper eating and the necessary sequels to the same—bad teeth and disturbed digestions. Our investigations of the feeding and food requirements of children

of Chicago some five years ago only confirmed what every thoughtful citizen might know, but I am convinced its importance cannot be overestimated.

Next to improper food in all its parts as a deterrent of normal growth must be recorded the factor of irregular, inadequate, or disturbed sleep. According to our experience this does not apply to the poor and needy or the lower section financially considered, of the fairly comfortable social strata of a metropolitan school population, as frequently as to the children of the comfortable and well-to-do. With the latter not infrequently late hours, social gatherings, excessive indulgence through the day, in a marked degree cause nervous exhaustions whose injurious effects continue to show themselves well along into the adolescent period and for which the school regime is often wrongly held responsible. All this again indicates the necessity for popular education to reach back into the early and later home life of children, not only indirectly but directly in some positive ways.

Further, the clean, well-clothed, fresh-aired, and adequately slept and properly fed young generation is indeed poorly furnished for a life of efficiency if the remaining vital factor, which affects normal development, is not taken cognizance of and provided, namely, educative muscular activity. Sporadic, irregular, ill-advised, individual or group training for children in motor control is found injurious or ineffective, whereas its total absence in the home and neighborhood and its virtual absence in school activities renders all other care besides it of little or no avail.

Educators are just awakening to the vital significance for our present generation of educative muscular activity as an hygienic consideration of primal importance and every physical and mental test and measurement bears out the suspicion of our first inspections and observations. Free and directed plays and games and ordered regular exercise in municipal playgrounds, social centers, and school yards, merely point the need and the way to begin early and adequately round out the physical and mental hygiene of the child in educative muscular activity.

As already indicated these factors which operate as handicaps to normal development in infancy and early childhood continue their prejudicial influence with cumulative power in school life and our attention is most often called to their after-effects such as physical disorders, physical defects and their correlates, mental dullness, incorrigibility, and even juvenile crime. All departures from normal of this character are merely symptoms of these underlying conditions of hygienic living, which are outraged, neglected or inadequately handled. Everything points toward prevention and no information of human relation is comparable in importance with hygiene. It is not only the necessary preliminary

to an effective education, but in its widest implications, it is education, for information and skill are the essential requisites in guarding against dangers, injuries and deterrents as well as in applying ourselves to remedy, correct and train. Here, as elsewhere, the best defense is often a vigorous offense.

Defective eyesight and hearing, difficulties in breathing, hypertrophic tonsils and adenoidic tissue, decayed and painful teeth, all non-communicable defects and contagious diseases of every sort have come to be considered as preventives or deterrents to normal growth and development of school children; as indeed they are found to be in the history of individual cases or groups, although a demarcation must be made of the detracting power of each, and of their influence in preventing the native power of children from complete maturation as distinct from the ability to progress at the same pace as the average in school studies, and it is perhaps needless to remark here that average in attainments or capacities is no safe criterion of normal development. Defects of the senses of sight and hearing, to which appeal is largely made in school-room activities, are considered by some to be the primary causes of delay or derangement of normal development, and it must be admitted that they delimit the number and quality of sense-impressions as well as contribute to the formation of injurious habits in school-room arts, especially in younger children, but they are by no means such potent deterrents to normal mental maturation, as for example, the deeper lying derangements, which we may group somewhat roughly as Nervous Exhaustions and Constitutional Disorders. In looking over the records of the first 7,200 cases of exceptionals that readily came to hand in the files of the Department of Child Study, it is found that only eight per cent. are school-room problems because of defective vision, and a little over six per cent. of the total number require either special care or training because of defective hearing, whereas over forty per cent. of the total number are nervously depleted, ill-nourished, weakened in power of resistance, uneducated in the fundamental bodily activities of their years, apathetic in voluntary initiative and lacking bodily control. Practically the same comparative ratings of the problem-producing power of the other commonly noted defects, enlarged tonsils, adenoids, defective teeth and the like, are found in the sample cases I have taken at random, plainly indicating the sources of these troubles to which I have referred, and as clearly suggesting the necessity of hygienically dealing with the common basic factors of diet, rest periods and educative muscular activity.

This further raises the general consideration as to whether, indeed, children and youth are normally developed if they are not sick and if they are not defective. To say that they are, means to take our cue

from the detection, correction or relief of disease, defects, and incapacities, instead of from a close analysis of the healthy, the efficient and thriving. Every step forward in this direction will indicate not only the desirable ideals for which to strive in group and individual excellence but as well the economical means to be adopted to attain them, though perchance our procedure will reduce our number of pupils found normally developed and lead us back to the simple environing forces that bring this about.

This serves to bring into prominence another influence whose neglect means unhygienic living, namely, the particular training of children to live with one another in personal relationship. Hygiene is not infrequently thought of as only dealing with physical conditions and circumstances that are conducive to health, and health be it added, understood in the sense of bodily well-being. As education has begun once more to come into her own to include bodily features and all that belongs thereto, so Hygiene or the science of well-being must always be thought of in terms of the mind as well as of the body. And as we ascend in the scale of human values and cultural sensitivity, hygienic education demands the exclusion of all morbidities, self-consciousnesses, false motives, fears, envies, angers, all emotional neuroses, all disordered attentional habits, all deranged associational processes, every clogged or explosive act of will and inconsistency in thinking, until the best functioning of mind as well as body is the common attainment of our children. And in this the wisest control of environment, both objective and subjective or personal, means the development of the best in each child and clearly outlines the great function of public education.

THE HYGIENE OF SCHOOL PROGRAMS

BY

HUBER WILLIAM HURT

Chance, though mathematical in its fatalism, is a poor conservator of health. Guesses are unreliable hygienic measures.

Yet, with over 80% of our students in precarious physical condition, the organization of their day's life has never been subjected to scientific scrutiny. Pure chance, tempered only by personal whims and traditions, has guided the educator in the organization of the programme from primary to university. The average school, of all grades, pays less attention to the hygienic welfare of its students than an intelligent farmer gives to his hogs. Buildings are built by people ignorant of heating, ventilating, and lighting hygiene, while the organization of the programme to combat fatigue and waste of nerve force is almost unheard of. The daily routine of a good dairy cow is more scientifically planned. In discussing this somewhat pioneer field it shall be my purpose to attempt to awaken interest and provoke thought and investigation, rather than to attempt dogmatically settle the problems raised.

(1) How much of school work may the teacher justly assign and expect of his average students at different ages or grades? Undoubtedly our psychology of *individual differences* reveals most strikingly those elements due to maturity. The old Jewish Talmud proverb said "to load the student like an ox." To-day we stress more the necessity for opportunity for expression of the primitive sociological traits. We must have play. Where is the happy mean? The best work is that with the most play in it, and the best play that with the most work in it. Under the guise of enjoyment an enormous volume of work may be done. Here the good German psychology of spontaneous interest plays a conspicuous part, but where will the elements of nervous fatigue demand the imposing of limits? Should a freshman in high school and a senior in college be assigned the same *volume* of tasks? We have certain traditions which demand of the former twenty recitations per week and of the latter from 15 to 18 per week, while it is true in the latter the term of his sentence demands a longer imprisonment in the lecture room. Those who have had an opportunity of an unhurried and extensive inspection of the German schools have found everywhere the complaint of overburdening in the higher schools which is voiced here in this Congress in a paper by a German "Kollege." In like manner

how many hours of instruction may an institution expect of its teachers? My college instructors averaged 12.3 semester hours per week last year, yet some institutions of assumedly college grade require 27 to 30. In what subjects must the hours be increased? Where *is* the real efficiency limit, or is there any?

(2) Is there any most effective sequence of subjects? Of course we have our own prejudices and opinions but can we defend our position? Should the day be started with mathematics or history; athletics or language? Should the sequences be correlated or contrastive? Or does it make no difference with our mental pabulum whether we take soup first or last? Given a physically imperfect, neurotic, malnurtured group, should not their energies be scientifically conserved?

(3) In this connection what are the facts about single and double sessions? Is it too fatiguing to concentrate the day's recitations into the earlier hours? Or assuming a proper adjustment of the noon interval is it better to prolong the school day? It is a well-known fact of microscopic anatomy that a nerve cell, taken after a day's fatiguing use, is entirely different from one taken for observation following a night's rest. The difference can be easily seen in the plumpness of the rested cell as contrasted with the shrivelled fatigued one. The afternoon work, therefore, is done under unfavorable conditions unless the noon interval be sufficient to repair the waste. Of the possibility of this I have grave doubt. My own experience and instinct favor the morning hours, the single session, but what are the actual average physiological facts?

(4) To organize properly a program it is essential that the differences of our dietitians be peaceably settled so as to answer the questions of the *when* and the *what* of the heavy meal question. When, if ever, should the *heavy meal* of the day occur? Personally, I eat no breakfast, thus having an 18 hour fast daily, the other meals are about equal and I usually work until midnight and enjoy unusual physical vigor. However such a program would kill many people. Hence it is important that as educators we receive definite dietetic principles to act, at least, as limits to our daily practice. Does such a heavy meal (and most families for reasons of labor have one) interfere more with afternoon recitations or evening study? Or should a student eat lighter meals at more frequent intervals? Is emptiness of the stomach (which we call hunger) worse for mental work than the presence of food in the digestive tracts? This field of meal and efficiency must receive careful scrutiny, especially for our colleges, where the living conditions are under some measure of control.

(5) When should intervals or lulls or change of work (which is said to be rest) occur? Is the Prussian plan of hour periods— $\frac{3}{4}$ recitation or lecture, $\frac{1}{8}$ relaxation—justifiable? Or is the five minutes, for change of classes, in High School sufficient? How long should the periods be at different stages of growth? True, custom—that most implacable of tyrants—has crystallized usage into a semblance of theory, but where are we as regards what is hygienically best for the student? How rapidly can the blood, under average school conditions, remove the sarcolactic acid and other waste products of nerve cell activity and provide new fuel?

(6) In the schools which are organized on the double session plan, which of apparent necessity included in all American colleges, the average time allotted for lunch or noon meal ranges something over one hour. It means a mad rush homeward, a rapid swallowing of half masticated food, torpor and heaviness thereafter. That an excess of blood in the brain is essential to concentrated thought processes is well known. Probably many of you here have personally conducted or watched a blood-weight experiment. You have seen a man balanced accurately on a board supported on a fulcrum at its center of gravity. Some question calling for thought has been asked and instantly you have seen the "head end" of your balance drop. Under normal conditions about one-fifth of the blood of the human body passes through the brain. Now picture this situation: The digestive tracts filled with food demanding an excess of blood volume and pressure for its proper digestion. In this condition (and with the food poorly masticated, hence requiring longer period for digestion) the school lad rushes to his one or one-thirty class, arriving in the nick of time. Here the teacher struggles with the sleepy, groggy class. The anemic condition of the brain, the consequent poor drainage of waste, brings on actual insolation and sleep. Is the boy to be blamed or the system, or the lack of it? In the institution I have the honor to represent as president and delegate—Lombard College, Galesburg, Illinois—I have tried to combat this anomalous condition by concentrating all possible work in the morning hours and for that left over demanding that a two-hour interval divide the last morning work from the first afternoon classes. I have done this in order to give more nearly the proper reaction time for the heavy part of digestion. The improvement in mental alertness has been so pronounced as to justify the continuance of the plan.

I am intensely interested in the physical well being of my students. The strong body is a *sine qua non*. In addition to the medical inspection by men and women physicians, the oversight of students by different physical directors, I have employed a skilled dietitian to secure effective

food values and have provided time for their digestion. With these and a score of other desirable measures I felt the need of all possible "light" on hygienic matters and hence have brought a few vital problems before you to possibly provoke thought and investigation. I hope, Mr. Chairman, that the next Congress will bring forth papers reporting to us questionnaires and psychological testings of some of these problems, thus making possible less human waste and more effective school life and through these a useful intelligent citizenship.

THE EFFECT OF SCHOOL WORK ON MENSTRUATION

BY

E. H. ARNOLD

The present investigation was made in the first place to enable me to cope with a condition, in the second place to help establish a theory. The condition may briefly be stated as follows: Two years is a short time to prepare people for teaching. If, instead of preparing for teaching in the grades, one prepares people for a specialty, two years is under most favorable circumstances practically insufficient. The real or supposed incapacity for work which has to this time been attributed to the condition of menstruation will be one more aggravating circumstance in normal schools, the pupils of which are puber females. The problem becomes more perplexing and difficult of solution if you undertake to fit females as teachers of physical training, for physical training does not only require mental effort, but the student should daily engage in the practice of one or another form of gymnastic or athletic exercise. If menstruation is a contraindication to exercise, what is to become of the training of women students? While menstruation in a series of individuals will group itself around certain days in the months with some regularity, there is yet sufficient diversity to prevent the making of suitable schedule arrangements which would take care of this condition. How great a hindrance this becomes will be apparent, if we consider the time allowance that one should have to make, were it the rule that a menstruating female should not indulge in gymnastic or athletic exercise. In our investigation we found the menstrual period to repeat at about twenty-six days interval and to last about four and three-quarter days. This would give fourteen menstrual periods, lasting sixty-six days, in the year, or about one-fifth of the time. Allowing for the fifty-two Sundays it would reduce the time by one third. That is to say, a nine months' school year would equal a six months' one. To accomplish the training of a physical training teacher within two six months' periods is, with us, an impossible undertaking. These considerations shaped my course when I was first called to direct the affairs of a normal school of physical training. I had had eight years of experience in the physical training of women in private classes. While no control of the effect of exercise upon the menstrual condition could in these be had, enough was made known to me from information volunteered that I was sure the effect of exercise upon menstruation in a healthy woman would not be deleterious but beneficial. Having had

occasion as a physician to become better acquainted with these facts since some of my former pupils sought my medical advice, I had formed the conviction that it was perfectly feasible for women to exercise during the menstrual period. Complying, then, with the economic necessity to restrict the normal training of our students to two years, I determined to use this time to the full and that the female student must do the mental and physical work prescribed by the school without regard to the menstrual period. Between the resolution and carrying it out many difficulties have been encountered. But few people subject themselves with grace to the educational process. If this educational process takes place under unusual circumstances, which according to popular opinion may endanger the pupil's health, passive and active resistance may be expected. Such has been my experience. Not only did the pupils object but parents were reluctant to subject their daughters to a regimen apparently as severe as hazardous. If one opposes to these objections of pupil and parents only a conviction and if one's conviction is based on general impressions, one must indeed be courageous and stubborn to stick to one's plan. Sufficiently stubborn to maintain the stand once taken, I recognized the necessity of backing my conviction by convincing proof. Authorities on this matter there were none. The investigation had yet to be made that would establish the effect of exercise upon the menstrual period. Once this proof were favorable to my opinion my armament became impregnable. We started, therefore, in 1907 to collect material. Each pupil was required to fill in a card giving a record of each menstrual period during the school years. The items on this card are as here shown:

Name _____	Descent.								Complexion		
Age _____									Skin.	Eyes.	Hair.
Date _____	Beginning								A. M.	P. M.	
	Cessation								A. M.	P. M.	

Day	1	2	3	4	5	6	7	8	
Pain									None. Some. Much. Mild. Severe. Sharp. Dull.
Flow									Scant. Moderate. Free.
Clots									None. Few. Many.
General Condition									Headache, etc.
Mental Work									Hours
Physical Work									Hours
Remarks									

On the basis of these cards and with the help of a strict monitor system we were at first only able to keep track of the regularity of menstruation with sufficient accuracy to prevent pupils absenting themselves from work without proper cause. As the material accumulated and it was shown that menstrual conditions did not grow worse, we refused to excuse pupils from mental work of any kind during the menstrual period. Following that, pupils were no longer excused from all physical exercises during this period, but only when in their opinion they were unable to undergo exercises with benefit to themselves. The next step was to make attendance upon the so-called lighter forms of gymnastics, compulsory and to grant excuses from these only in special cases. When the results were satisfactory we determined not to grant excuses from any form of exercise during menstruation unless for special reasons. At the present time a pupil takes part in all exercises during menstruation except swimming. As all absences from whatever cause, including sickness, lower standing in our school, a pupil compelled by menstrual conditions to abstain from physical work, suffers in her standing. We succeeded in making female students undergo a normal course of physical training without any interruptions whatsoever. The efficiency of the school and of the pupils has thereby been raised quantitatively by one-fifth. I have attained what I set out for, namely, to have a nine-month normal physical training course mean nine months' work for each student in the school. The results of this attempt I shall show you in the charts to follow. Some explanation as to the regimen and data are necessary. The student material with us is fairly homogeneous. Students are all over eighteen years of age, the average age being twenty-one years. Students must be in good health when entering school. There is a natural selection in the calling of physical training, only people of fairly robust health choosing it. Candidates are required to have undergone high school training. This makes them come from about the same strata of society. They have lived pretty much under the same home surroundings. They come practically from the same stock. More than three-fourths of our pupils are of American extraction. Pupils of foreign birth are practically absent. Students come from all sections of the United States. With this homogeneous material to start with, a regimen which should give uniform results both in work and in an investigation of this type is carried out. About 75% of our pupils are housed in school dormitories. Here they rise and retire at certain times. Meals are served at certain times and of course they are of the same quality and quantity to all students. Recreations and amusements are regulated. All students take the full course, wherefore, working conditions are the same for all as far as the schedule is concerned. They differ slightly as to the mental home work that

pupils may be obliged to do in order to keep up with their class. The school work comprises six scheduled periods a day of fifty minutes duration each, except Saturday when three periods are had in forenoon only. Of these periods, about one-half are devoted to mental and an equal number to physical work. The mental work consists of lectures and recitations, laboratory exercises, and a compulsory study period under supervision. The physical work consists of gymnastics of Swedish and German type, dancing, fencing, indoor games, the giving of massage, skating in winter. At the beginning and at the end of the school year there are outdoor seasons of about four weeks each. During these periods no mental work has been done of late years. The physical regimen, however, is exacting, consisting in four periods five days a week of outdoor sports. In the fall term tennis, field hockey, soccer, baseball, outdoor basketball, rowing, swimming and golf are had. In the spring term tennis, track and field sports, rowing and golf are indulged in. The exercises go on heat or cold, rain or shine. With us work means work and our pupils are here for work, therefore these periods stand for as much work as female students do anywhere.

Before presenting the data I shall mention the theory. Since woman is entering upon pursuits that have heretofore been the province of man's exertion only, she has become a competitor in these various fields. Her chance of success will depend on her efficiency. From a quantitative standpoint her efficiency, on account of the menstrual period, is lowered by one-sixth as compared with the male. She can, therefore, never hope to be as efficient and recompensed as men in the same field of endeavor. When one undertakes to fit women for a livelihood it should be done so as to remove any and all handicaps, including the handicap of menstruation. *This is, of course, to be thought of only in the way of reducing the incapacity due to this condition to a minimum or zero, not to remove the condition itself. After presenting my data I may indulge in some speculation as to whether it is possible to accomplish this. Objections may be made to my data on the ground that all are collected under the influences of exercises and allow no comparison with the former state of the individuals under investigation. Attempts have been made to establish a basis of comparison by inquiring into the menstrual history of the students coming to school. We have been met with the fact that these histories are practically valueless because highly inaccurate. Not only is the ordinary female unacquainted with regularity of the menstrual period, but she knows nothing definite about its duration. Even by those who have definite knowledge of these things and they are the exception, such terms as describe quality of pain, general condition, amount of flow, etc., are differently interpreted. We have, therefore, not recorded the menstrual history previous to

entrance. Our difficulty points out two things. In the first place that the picture which the medical profession, as well as the laity has of menstruation is an inaccurate one, for it is based upon inaccurate data. It is my opinion that the menstrual history given by patients to physicians is accurate only as to the exaggerated phenomena which are best remembered by the patient. It is again accurate only as to the recent periods. Another conclusion is warranted. One remembers those things best that are connected with joy or pain. If menstruation were as painful and disagreeable as is usually assumed, its details ought to be much better remembered by the ordinary female. The fact brought out by our investigation that they are not, controverts the assumptions. We are warranted in the conclusion that usually menstruation is a physiological function of which the individual is not particularly conscious, not enough so at any rate to remember details. Our observations have taken into account the menstruation of 238 individuals who have reported their menstrual periods for two years. Not till the material was sifted did we become aware that even these records did not all present such accuracy as would warrant their use. We have had to throw out quite a few. With all that, the average of records for any one month is about 100. We have plotted approximately two thousand menstrual histories, the data of which were complete and accurate. We are continuing the regimen as well as the reporting of menstrual conditions by the pupils with this difference, that the records are in charge of a monitor and scrutinized on their receipt. We hope to have within a few years again as much material which will be practically free from omission or error. We feel warranted in presenting these data, though they are not ideally correct, as being as far as our knowledge goes the most correct and complete in existence.

The first table and chart present *duration*. We have it as being 4.84 days on the average in the junior and 4.72 in senior year. While this is not a considerable reduction, it becomes striking when taken in connection with the other facts. Everyone must be struck by the greater regularity of the curve shown in the senior year. This in itself is an improvement.

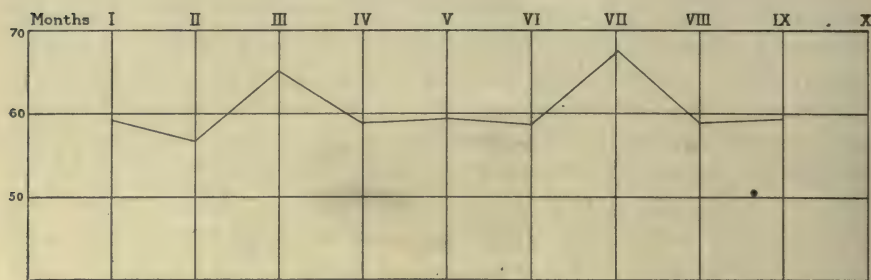
We next approach *regularity* (Table and Chart No. 2). The interval in the junior year is 26.08 and in the senior 26.50 days. This means that the number of menstrual periods in a certain given time is diminished, an individual gaining about one in eighty. I draw your attention to the end of the curve in the senior year on nearly all the charts. It shows a steady rise, while the first month of junior as well as senior year shows a depression that is fairly regular. Now the first month of junior and senior year is given altogether to outdoor work which, as before said, is severe. No mental work is done at this time and we have a diminution of nearly

all the phenomena of menstruation throughout. Why, then, this rise at the end of the senior year? In the first years that this investigation was carried on there was no outdoor work at the end of the year, but the last month was given to final examinations. These, together with the anxiety in the senior year as to graduation, in my opinion, are responsible for the rise in the curves. As now the final examinations in junior and senior year are had before the first of May the mental strain is taken away and we should expect in a later report to see this rise disappear. Coming to the *flow* (Chart and Table No. 3) which we plot as scant, moderate and free, valuing them as 1, 2, 3 respectively and multiplying by the number of days, we find a slight increase in the senior year to which the first and last month especially contribute. The senior curve, however, shows once more greater regularity when contrasted with rises and drops in junior year. The phenomenon of *clots* (Chart and Table No. 4) which are given as none, few, or many, once more multiplied by the number of days on which they make their appearance is .84 in the junior and .82 in the senior year, showing a slight diminution. When we come to consider *pain* (Chart and Table No. 5) we find that the amount of pain is increased in senior year, the average being 2.35 for the junior and 2.50 for the senior year, to which higher senior average the rise in the last month contributes a large share. In the *duration of pain* (Chart and Table No. 6) we find, however, an improvement, the averages standing as 1.62 for the junior and 1.39 for the senior year. The quality of the pain is likewise improved in senior year there being a drop from 2.07 to 1.93 (Chart and Table No. 7). Were one to make a composite chart of all the items of pain it would be found that there is a steady and marked improvement, likewise a tendency to greater regularity. If the changes are not considerable, it must be remembered that the time in which they were brought about was only eighteen months, that menstruation is such a firmly established function, even at eighteen or twenty years, that any change in a large number of observations may be small and yet mean much. These charts and figures take on greater meaning if we take into account the amount of work done during the menstrual period by the individuals under observation. Thus we find that the juniors are able to do 9.70 hours of mental and 9.84 hours of physical work during it (Charts and Tables Nos. 8 and 9). This means scheduled hours of work. The curves show a rise in the capacity for mental and a much more marked and steadier rise for physical work in the senior year. The climax there being reached at the end of the term, when twelve hours mental and twelve hours physical work are being done. This means that while during junior year a student carries $17\frac{1}{2}$ hours of work during a menstrual period slightly longer than the senior's, a senior

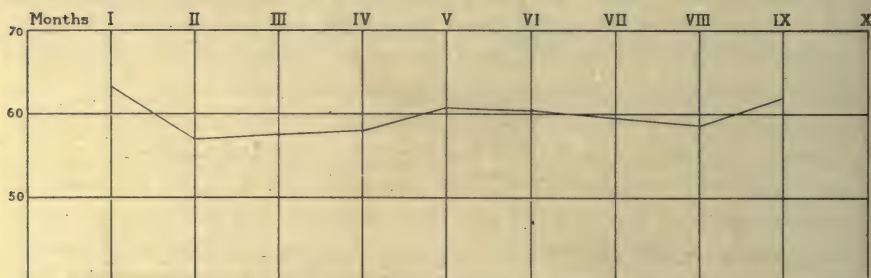
carries a little over 24 hours of work in a shorter period, that is to say, practically the full schedule. Within two years, then, the student has reduced her incapacity to work during the menstrual period to a negligible quantity. Recall in this connection that these data include many cards in the first couple of years where the amount of work done by the seniors was not large, no absolute compulsion being exercised. In the next couple of years the rise in working capacity will continue, we have no doubt, and will reach well over 90%. When the working capacity of woman reaches 90% their efficiency, as far as amount of work goes, is practically at par with that of man. We have justified our theory that it is possible to conduct a school of physical training for women for purposes of life. Life demands steady work; this school prepares for it. Considering the amount of work done the small improvements in regularity, duration, clots, pain, etc., shown will take on a new meaning, namely, that in spite of an increased amount of work, not only has there been no deleterious result but the periods have become slightly farther apart, shorter in duration and milder in pain. We have gained the one-sixth in work which before was lost.

A word as to the speculation. Increased mental and physical work of women between and during the menstrual period makes the period scarcer, shorter and milder in this instance. Will it do so under all circumstances? Observations on the women of savages and of primitive people, where women do a great deal of physical work should throw interesting light upon this. Whether such improvement continues as our pupils leave school we have so far no means of knowing. We shall direct our next investigation to this point. But if mental and physical work does shorten and milden menstruation, is the result eventually going to be beneficial to the female or not? Is this process progressive with years of work? Will it eventually transmit from generation to generation? Will we see a lowering of this function, without a decline of femininity? If we remember that the rise and fall of great periods of civilization such for instance as the Roman one, has been reflected by, if not closely connected with, the decline of femininity of the period, one might indeed hesitate to recommend a regimen which decreases some physiological manifestations peculiar to the female. Will dire results to our civilization be the unavoidable outcome of such a decline?

I cannot to-day stand forth as a prophet. So far our investigation shows all improvement. It will be hard to convince people that an improvement is undesirable. However, before taking such a view of the subject, investigations of like nature will have to be made in other walks of life, and will have to extend at least over two generations to be conclusive. We, therefore, must for the present rest satisfied with what we have attained so far.



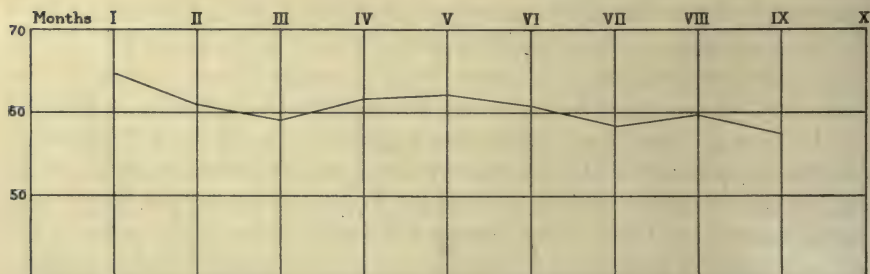
Junior Year



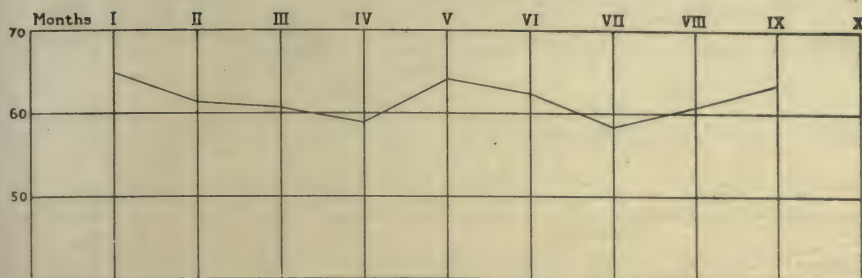
Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year	4.74	4.55	5.21	4.72	4.77	4.71	5.40	4.72	4.74	4.84 days.
Senior "	5.05	4.56	4.63	4.63	4.82	4.81	4.74	4.70	4.95	4.72 "

Table I. Duration of Period.



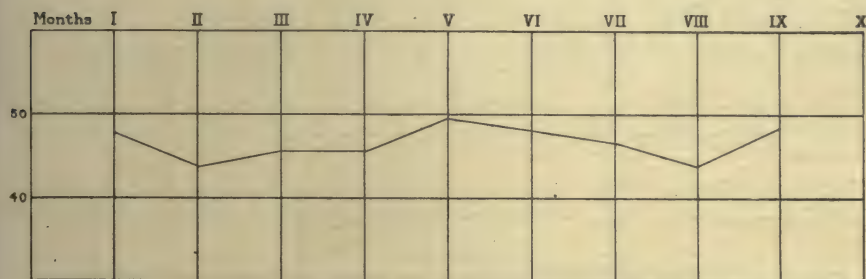
Junior Year



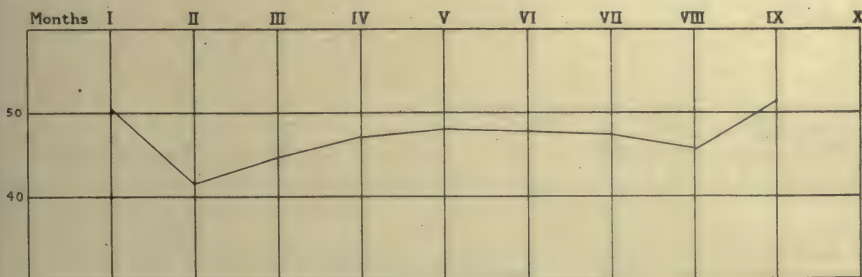
Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year.....	27.81	26.26	25.53	26.53	26.76	26.20	25.19	25.73	24.78	26.08
Senior Year.....	27.80	26.48	25.98	25.40	27.60	26.80	25.08	26.03	27.33	26.50

Table 2. Regularity.



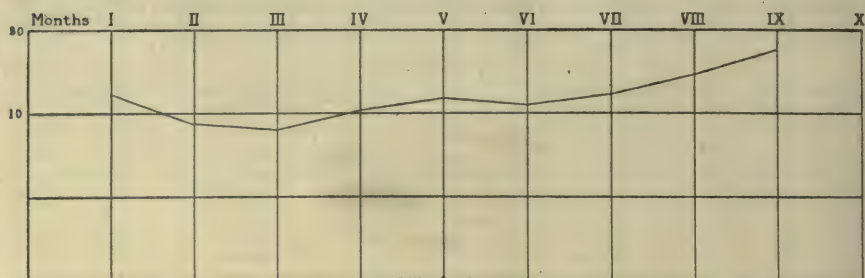
Junior Year



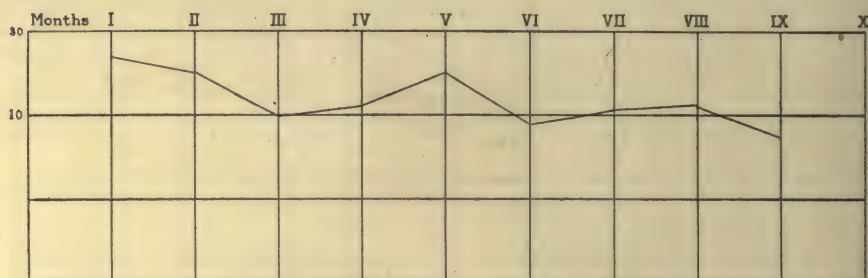
Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year.....	9.53	8.64	9.11	9.02	9.86	9.59	9.24	8.74	9.64	9.26
Senior Year.....	10.06	8.31	8.97	9.40	9.58	9.51	9.44	9.06	10.08	9.38

Table 3. Flow.



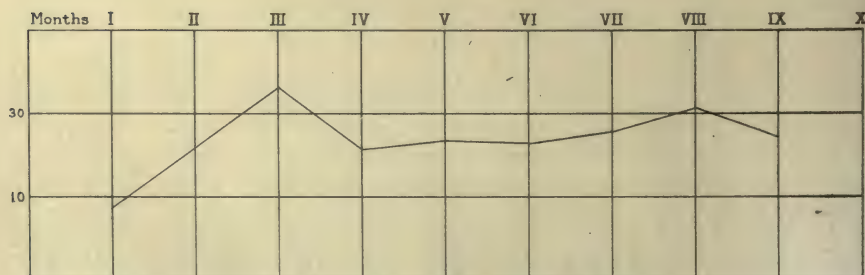
Junior Year



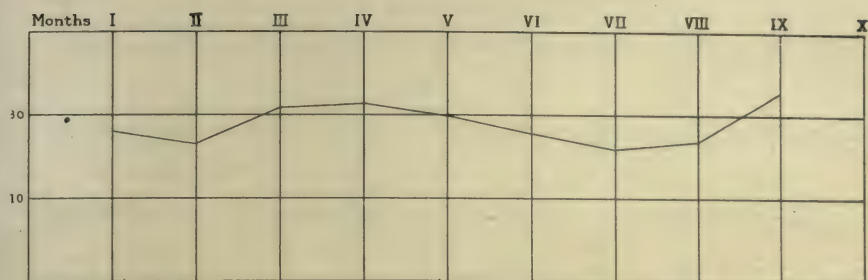
Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year.....	.85	.63	.57	.73	.84	.78	.85	1.05	1.26	.84
Senior Year.....	1.18	1.06	.70	.79	1.06	.63	.74	.77	.50	.82

Table 4. Clots.



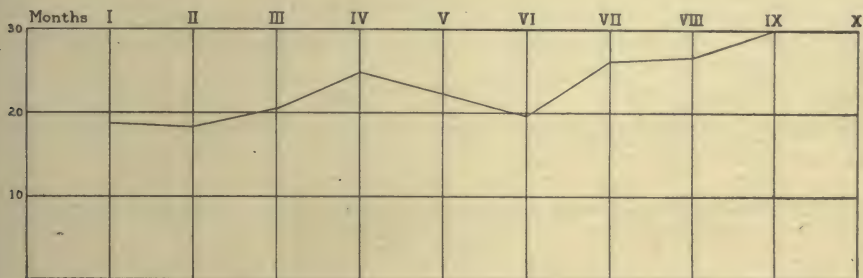
Junior Year



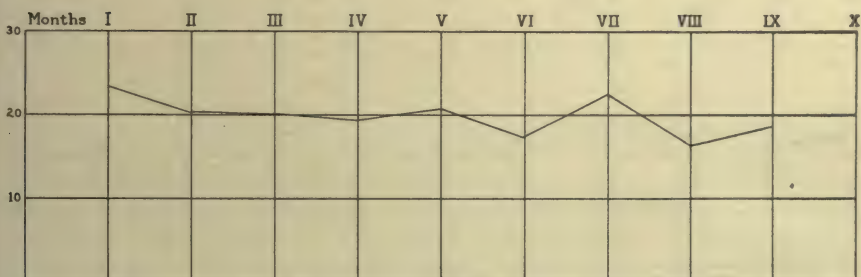
Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year	1.21	2.16	3.21	2.16	2.32	2.28	2.49	2.88	2.40	2.35
Senior Year	2.50	2.26	2.85	2.93	2.74	2.48	2.20	2.32	3.15	2.60

Table 5. Amount of Pain.



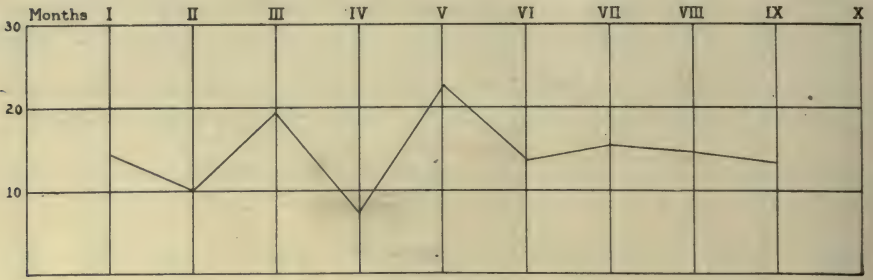
Junior Year



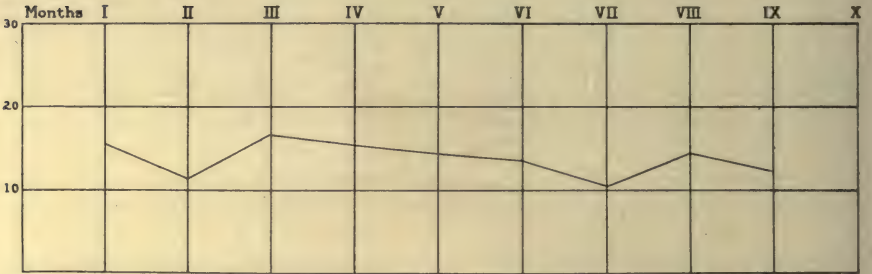
Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year	1.32	1.30	1.43	1.76	1.57	1.40	1.84	1.87	2.12	1.62
Senior Year	1.65	1.45	1.43	1.37	1.48	1.20	1.61	1.12	1.26	1.39

Table 6. Duration of Pain.



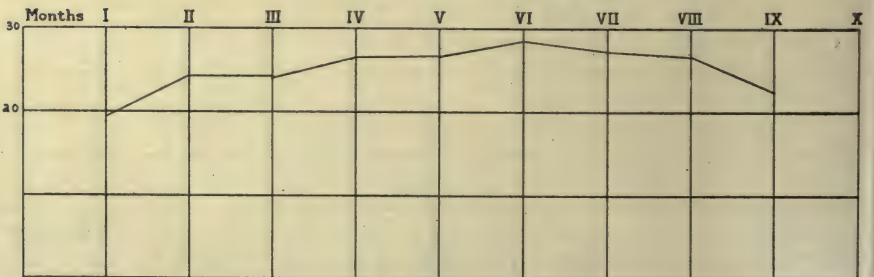
Junior Year



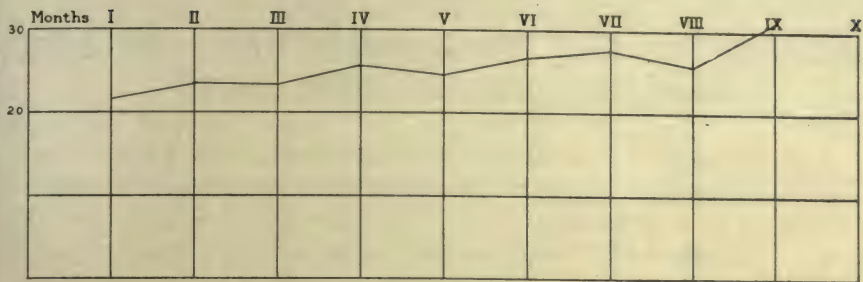
Senior Year

Months	I	2	3	4	5	6	7	8	.9	Average
Junior Year.....	2.07	1.57	2.79	1.09	3.11	1.95	2.12	2.-	1.92	2.07
Senior Year.....	2.22	1.59	2.28	2.12	2.02	1.89	1.51	2.-	1.77	1.93

Table 7. Quantity of Pain.



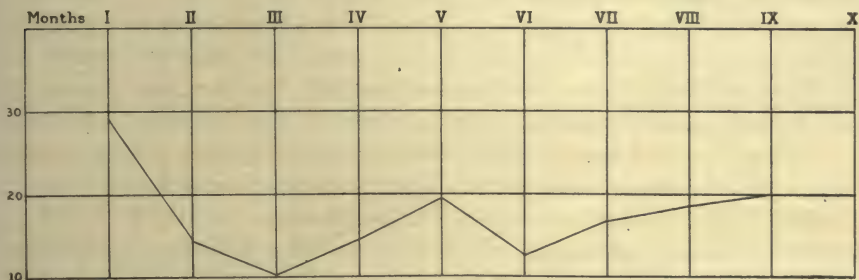
Junior Year



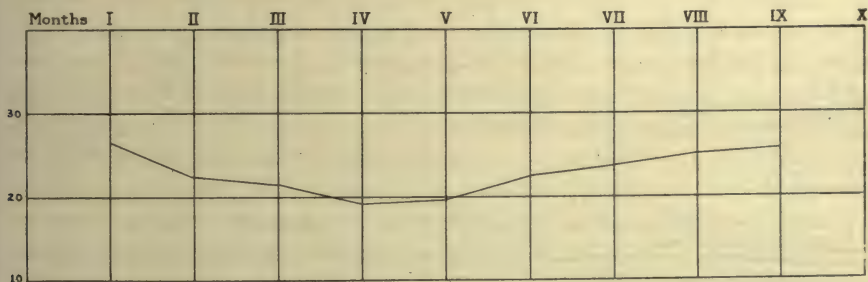
Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year.....	7.63	9.49	9.36	10.-	10.20	10.88	10.72	10.35	8.70	9.70
Senior Year.....	8.46	9.23	8.89	9.66	9.57	10.37	10.44	9.93	12.04	9.84

Table 8. Mental Work.



Junior Year



Senior Year

Months	I	2	3	4	5	6	7	8	9	Average
Junior Year.....	13.40	6.31	4.75	6.62	8.83	5.81	7.52	8.15	9.05	7.82
Senior Year.....	11.88	10.21	9.79	8.73	8.87	10.20	10.50	10.66	12.47	10.37

Table 9. Physical Work.

DISCUSSION OF HIS OWN PAPER

BY

E. H. ARNOLD

I have no doubt that the curves here presented offer a good many points for discussion. Some of these it will be worth our while to make the subject of later investigations. It is undoubtedly important to be able to trace the effect of heat and cold, damp and dry weather on menstruation. Undoubtedly such effects exist. Without knowing anything definite on this we may follow with safety the rule that sudden changes in temperature must be guarded against. Our regimen provides for this. Not only do we make our students pay attention to the daily weather forecast, but we make them also observe the thermometer, barometer and hygrometer. We ask them to be guided by these and to provide themselves in the way of dress against any harm that may come from these sudden changes. If, for instance, the barometer suddenly drops, if the weather man predicts a storm and a girl turn out without rubber shoes, raincoat and umbrella, be caught in a rain and suffer in her menstrual condition so that she is unable to perform her work, she gets automatically punished by losing from 1 to 4 points in her standing for each period of schedule work missed. We do not excuse pupils for being sick. It is their business to be well and to keep themselves so.

As to the drop and rise around Christmas time, I may say that it is not only to be based upon weather conditions. I incline to the view that the three weeks' vacation and the lack of proper management at home always is responsible for this untoward effect. We manage our girls so much better than the mothers do; it's the regimen that tells.

Answering Mrs. Ella Young's remarks and questions, let me say that she speaks as an individual. Without question, like any good rule, this will have its individual exceptions. I would be the last one to have you go back and advise unlimited work of say for instance, high school girls, under this condition. It would prove disastrous. Let me call your attention to the fact brought out in my paper that we introduced our regimen gradually; but, most of all, that these results have been gotten and can very likely only be gotten again under a regimen as ours. The matter of rest which has been mentioned in this connection is of great importance, but notice that our pupils retire and rise at certain hours; that we regulate their pleasures. It is, I think, not a very unfrequent event to have a girl dance all night through before the advent of a menstrual period, and then promptly lay any trouble that follows at the door of work. I think that the days before the period are as important as regards management as the period itself.

THE PHYSICAL EFFECTS OF WRITTEN EXAMINATIONS UPON SCHOOL CHILDREN

BY

DEWITT GILBERT WILCOX

Why is the world to-day placing so much emphasis upon physical efficiency? Is it merely a desire for an evolution of brute force? Is it the insatiable greed of nations to develop conquering armies? Is it a reversion to the barbaric days of a survival of the fittest? None of these questions will bring forth the real answer. It is deeper and more far-reaching than any one or all combined. It is for the perpetuity of a race of sound and sane humans. The necessity for such efficiency is not for any one nation, class, or individual, it is world-wide. When we contemplate the statistical evidence showing the alarming and disproportionate increase of defectives, imbeciles, idiots, epileptics, criminals, and insane in our highly civilized races, we are staggered. But when we compare that evidence with the almost barren evidence of such increase or even presence of similar defectives in the semi-civilized or barbaric races, we must be profoundly impressed with the thought that there is some radical defect in our civilizing process.

It is this growing evidence of physical and mental deterioration of the world's civilized races which has called into being as by a universal impulse that deep-seated and well-grounded emphasis for physical betterment. When our insanity experts, with no uncertainty, predict the day in which the insane will so far outnumber the sane that the former will break from their confining walls and imprison the latter, it is time we ceased placing all the emphasis upon educational methods and gave some attention to the far more practical one of keeping people in their right minds. An educated lunatic may be an ornament in a padded cell, but in raising potatoes for a dependent family he would at least require an understudy.

If the number of insane persons which are in our state hospitals to-day, plus the number of sick and disabled which are in our general hospitals could be cured and transplanted to our undeveloped farm lands, and there set to raising wheat and cattle, there would be an instant end to the high cost of living. There are to-day in round numbers, 300,000 persons confined in our state and general hospitals who not only are non-producers, but who are costing the country millions of dollars in money. And be it remembered that a large percentage of these helpless are suffering from preventable diseases.

In considering the producing factors of mental and physical degeneracy, we must not overlook any single influence which in the least lessens the sum total of normal efficiency. To-day the great watchword of reform is prevention. We may not be able to give normal mentality and bodily vigor to the 300,000 derelicts now in our eleemosynary institutions, but if the perpetuity of the human race is to be continued on a basis of sanity, it is imperative that we should prevent something materially less than the full number taking the places of the derelicts who pass on.

Child study is the basis of preventive medicine, or better still, as Oliver Wendell Holmes said, "The study of the child 200 years before it is born." With this array of evidence confronting us, it behooves us to study child life from every point of contact. It is no single factor nor group of factors which become the underlying cause of this physical degeneracy, but each one plays its part toward lessening the mental and physical resistance of the growing child until the accumulated load will no longer bear the additional straw. When that additional straw is added the nerve fibre breaks and a derelict is born.

The American child is placed in school at five or six years of age, and from that period until the age of fourteen or eighteen about one-third of his waking hours is spent under the influence of the school room. Whatever, therefore, counts for environment during the moulding period of life has opportunity for full play.

My paper has for its object the consideration of but one factor and its influence in affecting the child's future physical welfare. From the time educational methods were conceived up until the present, it has been deemed necessary to test a pupil's progress by some sort of an examination. In an evil hour someone devised the iniquitous method of subjecting pupils of all ages to written term examinations. As time went on, more and more importance was attached to these so-called tests, until in some places the examinations took higher rank than the method of education. Eventually this emphasis became so marked that pupil and teacher studied and taught not so much to acquire and dispense the real essence of intellectual acumen but merely to meet successfully the approaching examination. With such superlative emphasis placed upon the outcome of an examination it was obviously impossible that a certain percentage of pupils subjected to this harrowing method should not anticipate a term examination with the utmost fear. In many instances amounting to a terror surpassing anything which the average child ever encountered. While those terrorizing methods which in truth were nothing but barbaric in character have to a great extent been supplanted by milder and saner ones yet in many cities and states there is yet placed such a burden of weight upon the outcome of term

examinations that the element of fear preponderates beyond all bounds of reason and humanity. It is but comparatively recent that we have learned just what the physical effect of fear is. Through a careful study of the ductless glands made by Cannon, Sajou, Crile, Cushing, and others we know that fear, anger, passion, undue excitement and worry produce a direct action upon certain of the ductless glands with a resultant physiological effect.

These glands, which embrace the thyroid, the pituitary, and the super renal capsules, manufacture an internal secretion which is carried directly into the blood current. While a normal amount of their secretion is essential to maintaining the balance of good health and bodily development yet an over secretion may lead to very serious consequences.

For instance, an over secretion of the thyroid substance leads to that serious affection known as Graves' diseases or exophthalmic goitre, an over secretion of the pituitary extract leads to giantism and acromegaly, and an over activity of the super renal capsules leads to serious disturbances which we will later consider. All these glands are directly under the control and influence of the nervous system, consequently any profound nervous impression will, especially if it be frequently repeated, show its effects upon these sensitive ductless glands. All of the ductless glands are much more sensitive as well as much more essential to the developmental period than to adult life. The thyroid gland can be removed entire after middle life with no ill effects but if removed during the developmental period, cretinism and idiocy result. The ovaries and testicles may be removed after middle life with little or no change in the character and disposition of the individual, but if such operations are performed during youth or adolescence the individual becomes a physical nonentity.

Cannon in a very exhaustive study of the effects of adrenalin (the extract of the supra renal capsules) upon the human system, brings out some extremely interesting facts.

1. He has demonstrated beyond question of doubt that a hypersecretion of this substance produces marked contraction of the arteriols with a corresponding increase of blood pressure. He further demonstrated that emotional disturbance such as fright, leads to an increased amount of this substance being thrown into the blood stream. For instance, he found that a cat worried and frightened by the barking of a dog showed a materially increased amount of adrenalin in the blood with a correspondingly higher blood pressure. If, therefore, fear causes an hypersecretion of adrenalin and this hypersecretion in time causes an increased blood pressure, it does not require a great physiological imagination to see what will be the ultimate results in sensitive school

children who are subject to periodic ordeals of well planned fright seances. Humanity impels us to rescue the cat from the noisesome dog but civilized educators push the frightened child into the very jaws of this destroyer.

Were it not for the statistical evidence, as just quoted, of the alarming increase of nervous affection in our country, the burden of proof that term examinations were harmful might be upon those who brought the charges, but in the light of such overwhelming evidence, as our alienists produce, the burden of proof lies heavily upon those who insist upon or even permit them.

Dr. George W. Crile of Cleveland has recently instituted some very thorough laboratory studies in an endeavor to ascertain just what changes take place in the brain cells as a result of exercise, emotions, and disease. His first published findings appeared in April, 1913. He says, "In our laboratory experiments and our clinical observations we have found that exhaustion from intense emotion, from prolonged physical exertion, from insomnia, from intense fear, certain toxemias, hemorrhage, and the conditions commonly denominated surgical shock, produce similar manifestations and identical brain cell changes. * * * The cell changes due to the emotions, for example, are so similar, and in extreme conditions approach so closely to the changes produced by disease, that it is impossible to say where the normal ceases and the abnormal begins. * * * Fatigue from over-exertion produced in the brain cells like changes to those produced by fear, these changes being proportional to the amount of exertion. If the exertion is too greatly prolonged, it may take weeks or months for the cells to be restored to their normal condition. In fact, in exhaustion from the emotions or from physical work a certain number of brain cells are permanently lost. This probably explains the fact that an athlete or a race horse trained to the point of highest efficiency can but once in his life reach his maximum record."

If, therefore, we are prodding growing children to exert themselves to the highest efficiency point, are we not causing an irreparable destruction of brain cells with a resultant damaged brain when adult life is reached. Dr. Crile, in the same report, speaks of the effect of fear upon the supra renal capsules. He says, "According to our observations, no amount of physical trauma inflicted upon animals will cause hyperthyroidism or adrenalin in the blood, while fear and rage do produce hyperthyroidism and increased adrenalin. This is a statement of far-reaching importance and is the key to an explanation of many chronic diseases. * * * Chronic emotional stimulation, therefore, may fatigue or exhaust the brain and may cause cardiovascular disease, indigestion, Graves' disease, diabetes, and insanity even." In speaking

of the effects of the emotions upon the action of the glands of the body, Dr. Crile says, "So common is this particular result of prolonged emotion that someone has said, 'When the stocks go down in New York, diabetes goes up.'" In closing his remarkably edifying paper, Dr. Crile says, "As to the most important organ of all—the brain—everyone is conscious of its impaired efficiency under emotional strain, and laboratory researches show that the deficiency is accounted for by actual cell deterioration; so the individual who day by day is under heavy strain finds himself losing strength slowly. * * * 'The grasshopper becomes a burden,' and prolonged rest and change of environmental conditions are necessary for restoration."

If such brain cell deterioration actually takes place in a hardened adult brain under emotional strain, what must be the damage done to the delicate impressionable brain of the growing child.

Just a few words as to the extent which these examinations are employed in the schools of the United States, and the grades wherein they are required. About two months ago I wrote to 31 public school superintendents, whose schools were located in cities representing nearly all the states of the Union. From them I received 29 answers. Of that number, 13 schools, representing 11 states, had no written examinations whatsoever below the high school grades. One school, Topeka, Kansas, had no written examinations of any kind, either in the grades or in the high school. In 15 schools, representing 14 states, they had written examinations all the way from the second grade up. In 3 of these schools, they placed little emphasis upon the examinations, although they held them. In the 15 schools wherein examinations were held 6 of the superintendents expressed themselves as adverse to such examinations. This made a total of 19 superintendents out of the 29 who replied that were not favorable to written examinations. Of those who were adverse to the examinations, I will take the liberty of quoting a few.

The superintendent of one Kansas school says, "I believe that written term and final examinations are not necessary as a part of a school system. On the contrary, I believe that the schools fare better educationally by their elimination."

The superintendent for the Denver schools says, "I am startled at the character of your inquiry. We, in the West, have grown so far away from the exacting standard once adhered to that such inquiries aroused unpleasant memories of the schools I once attended in the neighborhood of Boston. I am sure it is possible to have children at any stage grow to power of definite thinking and of definite statement without making them dread such tests and in fact even to have them come to such tests with joy because of their known facility of performance.

Our students know that faithful *daily* performance will largely outweigh any term examination. There is, however, a grievous temptation, too often yielded to, through elementary and secondary schools, to assign too much written work, and to over-value it as compared with oral performance. All speech is of vastly more importance than ability to compose with the pen; and I do not think that we have yet reached the right standard of relative values."

From a Minnesota superintendent I quote, "As principal of a large grammar school, I became familiar with the system of term and final examinations and when I became superintendent I abolished them. I do not think young children should be obliged to take written term and final examinations."

From another Kansas school, "I have, in times past, seen pupils of nervous temperament, in both upper and lower grades, reach a physical state that should not have been permitted. There is no wisdom, as I see the situation, in young children being obliged to take written examinations as understood by the usual use of that term."

From Cincinnati, "On the other hand," says the superintendent, "I should like to say that I am not a great believer in examinations and do not attach any great importance to their scholastic results."

From one of the large cities of New York State the superintendent writes me, "I have no data as to the physical disability resulting from examinations; I do know that from four to twenty per cent. of our public school children suffer from nervousness. What part examinations play in this condition, I have not had a chance to make a study of."

From the progressive city of Oklahoma I have this, "I am diametrically opposed to final examinations as a test for qualification for promotion, and especially so with children below the 7th and 8th grades."

From a medical school inspector, I get this, "However, as a practising physician, I have frequently been consulted by parents regarding the rundown and nervous condition of school children, alleged to be due to the overstudy and worry in preparing for set examinations. The physical and mental disturbances most commonly observed in those cases are, anorexia, insomnia, despondency, irritability, fear and lack of energy. In female pupils, menstrual irregularities are often attributed to the worry, due to preparing for examinations. I regard set examinations. I regard set examinations as detrimental, not only to the physical welfare but to the interests of education. For at least a month before the final examinations all educational work is suspended and a system of 'cramming' substituted, to enable the pupils to pass and be promoted to a higher grade."

I find in the correspondence just quoted nearly every school wherein examinations are held, the superintendents called upon to defend them-

selves for allowing such to exist. However much our teachers and educators may claim that they see no ill effects of such examinations, their statement counts for little or nothing because first, few of them are qualified to render a scientific opinion as to the neurotic effects, and second, they have no opportunity of studying end results. In writing the superintendents of the schools for information, I wrote at the same time to the medical inspectors of such schools asking for information relative to the physical condition of children after taking these written examinations. It was rather interesting to note that in three instances wherein the superintendent said they had observed no ill effects, the medical inspector of those same schools stated that sleeplessness and nervousness amongst the pupils were very apparent after examinations.

If so large a proportion as 13 out of 29 of the public schools of our representative cities have discontinued their written examinations as a means of determining scholarship in the grades, and if it can be shown, as doubtless it can, that those schools are doing just as good educational work as any others, then what possible excuse is there for continuing a practice which is of doubtful utility and of unquestionable damage physically.

Educators must ever keep in mind the fact that they are dealing with children of the lowest grade of physical resistance as well as those of the highest, furthermore that the brightest and keenest minds are not infrequently associated with the most delicate, sensitive, impressionable nervous systems and that the set standard of requirement should be no higher than the weakest can attain without fear of bodily injury.

Our public schools cannot be conducted from a physical standpoint, at least on the principle of the survival of the fittest. One superintendent said in his letter that unless children had been inured to this process of gradation by examination, they would not be able to meet a crisis demanding a high degree of energy and nervous tension. In other words those who lived through this barbaric inuring process would be able to meet anything man might devise in the way of test, even including a Titanic disaster.

In 1902 I called the attention of the medical profession of New York State to the iniquitous effects of the Regents examinations upon younger children. I emphasized the Regents because those were made more terrorizing than any other form of examination in that the questions were prepared and the papers examined by an impersonal body who had neither acquaintance nor sympathy with the student body.

The great emphasis placed upon the outcome of those examinations, together with the unseen but dreaded impersonal body from whence emanated the questions and to which went the papers, set up in the minds of the more sensitive children an imaginary Molock to whom

they must all in time be offered. The New York State Homeopathic Medical Society endorsed the attack and the public press throughout the state generally showed by editorial comment that it also was heartily in sympathy with the same.

While the exacting methods of the Regents have modified somewhat, still the emphasis placed upon the outcome of those examinations are enough, to strike terror to the heart of many an adult were he obliged to undergo the ordeal. As a little miss of the Buffalo High School put it, "The school children start to worry in the seventh, sometimes in the sixth grade over the Regents." Be it remembered that every student, attending a school wherein the Regents are recognized, must, before getting any credit for having taken a subject, pass a written examination given by the Regents. No matter how high an opinion the teachers may have of the scholarship of that pupil, no matter how excellent his daily standing, that opinion counts for nothing in the eyes of the Regents. If that pupil fails to pass their arbitrarily set standard that year's study has been lost in so far as further advancement is concerned.

Now consider the solemn declaration which must be made by each pupil that no dishonest method has been employed and which declaration must be attached to his written examination paper, and you get something of an idea of the solemn awesomeness of these semi-yearly fright seances. I could occupy some few hours of your time, as could many teachers and physicians in citing concrete examples of pupils who had suffered serious physical injury from the effects of term examinations. These effects vary all the way from slight hysteria to suicide. I venture to say there is not a school room in the United States wherein term examinations are conducted with the awe-inspiring emphasis such as the Regents engender but that at least one concrete instance can be cited each year, showing the direct and marked injurious physical effects of such examinations.

While I have confined my remarks more especially to the effects upon children below the high school grades, yet the evil is by no means limited to such grades. High school pupils suffer also from these ordeals and there is no good reason whatsoever for the continuance of the nerve-racking trials.

I have chosen the younger grades especially to impress upon you the seriousness of inducing fright, worry or even undue anxiety in developing children whose over sensitive ductless glands may be excited to the point of autointoxication by repeated ordeals of fear.

In the June number of the *American Medicine*, the editor says editorially, "Examinitis is a newly coined word to express the idea that the English educational system is basically wrong in that it is designed to prepare students to pass examinations and not to train them for their

life work. The nation seems to have gone examination mad—at least the pedagogical part of the people. In fact almost every school advertisement states that the curriculum is arranged to coach the pupil for this or that examination. As a result an educational system has grown up which the critics denounce as chaotic and devoid of coördination. Nevertheless it might be well for us to do a little self-examination to determine whether we also have not carried examination of pupils a little too far. Let us remember that there is such a thing as examinitis, and that a brain crammed with a multitude of useless facts, may show up brilliantly on an examination, but be so clogged as to be unable to put the knowledge to practical use."

Dr. Chester Watchman, superintendent of the Willard State Hospital for the Insane in writing under the caption of "Prevention of Insanity," in the July, 1913, number of the New York Journal of Medicine, says, "For some years past the increase of mental disease has been noticed. The public is now appalled at the enormous number of insane confined in our institutions for their care and custody. Aside from the humanitarian standpoint our political economists are impressed with the burden to the state and country. What then are we to do to stem the tide? The aim of all rational preventive medicine is to remove the cause. I have often felt," says he, "that our modern educational methods were at fault in this respect. We have medical inspectors for our public schools whose duties are primarily to look after the physical well being of the students but too often the mental hygiene is entirely lost sight of. The writer learns from talking with a teacher in the public schools of one of our large cities that her efficiency is rated on the number of promotions she can show at the end of each term. This grinding and pushing is bound to be detrimental to those of her charges unfortunate enough to possess this inborn tendency (insanity) and more especially if it occurs at the critical adolescent period of life."

Dr. Ira S. Wile, member of the Board of Education for New York in the Medical Review of Reviews for June, 1913, says, "The health and welfare of the children in the public schools forms the most important topic in the entire range of educational themes. The aim of education is to prepare children for efficient citizenship; and as a fundamental basis for human efficiency, physical fitness and physical welfare are of the utmost importance."

In this large and influential Congress, I trust there are a sufficiently large number of sober-minded, sane members who will join with me in waging a battle royal against this one factor which unquestionably is a potent one, in recruiting that rapidly increasing army of physical degenerates who bid fair some day to outnumber and overwhelm the sane remnant.

DISCUSSION OF

DE WITT G. WILCOX'S PAPER

BY

DR. E. H. ARNOLD

If you recall the rise of nearly all the curves at the end of senior year on the slides that I presented with my paper you will find that I have traced the effect of examinations upon at least one condition. My findings seem to confirm to a degree Dr. Wilcox's opinion. I may further say that as a general impression I have it that I see more young women with enlarged thyroid glands than in former years. I have no statistical data to base this on, but we are collecting material on this point. Again, I am under impression that among the entering students we have more people with more or less pronounced queerness than we formerly had. Queerness which does diasppear in all cases somewhat in some cases altogether under our regimen. Whether these two conditions have to deal with the effect of school work upon these people in general, or of examinations in special I am unable to say.

Now as to examinations there are undoubtedly good and bad examinations. I hold that it is perfectly feasible to make all examinations conform to the good type. If examinations be such I cannot only not see any harm come from them, but I hold them to be beneficial and necessary. An examination is a test of capacity and ability. Life subjects us often to such tests. School should prepare for life. It must subject, therefore, its charges occasionally to lifelike tests. This altogether without reference of eliminating the fit from the unfit, or for purposes of promotion. Common sense is the final requirement in this matter as in some others, and the truth will likely lie midway between the two extremes.

DEVELOPMENT OF PLANS FOR THE CORRECTION OF STUTTERING AND STAMMERING IN THE PUBLIC SCHOOLS

BY

MARY G. CRAHAN

In all ages stutterers have claimed the sympathy of teachers who have tried to help them overcome their faults of speech but, unfortunately, in nearly all cases these teachers have failed.

During my experience as a grade teacher I had the usual number of stutterers in my classes. Like all teachers of good intention who try not to neglect any pupil entrusted to their care, I worked assiduously to correct the speech defects of these pupils, but without success. The occasional, temporary improvement which followed the introduction of some new trick of speech deceived me, and led me to believe that all I needed to effect permanent corrections was a longer time than the one term which pupils spent in my class. However, one of my boys by remaining a second year in my class permitted me to have an actual experience which proved that time alone added to the empiric methods employed was insufficient to produce effective results in correcting speech.

TYPICAL CASES WITH WHICH I HAVE DEALT BEFORE I RECEIVED MY TRAINING AND AFTER SUCH TRAINING

Case 1. James, a boy of twelve, entered the 4B grade. He was a very bad stutterer. During speech there were spasms of the facial muscles and the muscles of the throat as well as accessory movements of the arms, legs and body. He remained in my class nearly two years and we worked earnestly and unceasingly to correct his stuttering. With much patience we tried one trick of speech after another until we had tried all that I knew and, while there had been temporary improvement resulting from some of them it was but temporary, and, at the end of two years we had to admit defeat, for, not only was his stuttering worse than when I began to work with him but he was now thoroughly discouraged and nothing could induce him to make other attempts to correct his speech. At the earliest possible moment he left school to go to work but he soon discovered that his education had not fitted him for work.

In strong contrast to Case 1 are the cases which I have handled since I received my training in the correction of speech defects, some of which follow:

Case 2. Donald was a fifteen-year-old boy in 7B. He was a bad stutterer with spasms of the throat and facial muscles and accessory bodily movements. He was behind his grade and did very poor work. He was a very troublesome boy. His parents were advised to take him from school and put him to work. This they tried to do but found practically all doors closed to him. His defective speech excluded him from nearly all forms of employment, even the most unskilled, while his education was inadequate for positions where he would not find much necessity for speech, as in stenography, book-keeping and similar positions. A new problem had presented itself to the parents, the boy and the school and it had to be solved. At this time our Speech Improvement Class was being organized and Donald became one of its members. At first he was indifferent to the work but when he saw the speech of other boys improve he became interested and from that time on worked with a will. Not only did his speech improve but his improvement in scholarship was marked and, from a most untrustworthy, irresponsible boy he became a leader for good among his classmates and assumed many responsibilities which he could easily have avoided. He continued in school through the 8B and graduated with honors. He then took a course in a business school and now holds an excellent position in a New York office. His improvement in speech in itself is of great importance; but his gain in moral strength and character is of vastly greater importance than his gain in speech and the results of the work with this one boy have been sufficient compensation for all of the speech work which I have done.

Case 3. Edith was fourteen years old and in a 4B grade. She had a cleft palate, the cleft being one of the widest on record. She had had an appliance made which not only completely closed the cleft but supplied the septum in the nose and the movable soft palate. She became a member of the Speech Improvement Class immediately upon receiving the appliance. She was taught to produce the sounds by placing the oral organs in definite positions and she soon spoke remarkably well. Her vocabulary grew rapidly through practice in speech and she advanced in scholarship. She shows many characteristics of a strong teacher and if her education and speech training are continued she, through this wonderful appliance and the correction of her speech, will have been lifted from a life of oblivion to one of usefulness to society.

Cases 4 and 5. Two brothers, Edward and Joseph, were members of the Speech Improvement Class. The history of these cases must be given in one. There was a history of muteism on the maternal side. No defective speech on the paternal side. Two cousins of the mother were mutes, although in both cases the hearing seemed unimpaired.

Both cousins had been sent to institutions where they had been taught the sign language. As they grew to manhood they resented the fact that no one had taught them to speak. In both cases they became surly and disagreeable. The one who is now living has been sent with an attendant to live in the mountains because the family fear the consequences of his wrath over his disappointment at not learning to speak. The mother of Edward and Joseph was one of eight children. They all spoke fluently excepting her and she did not speak until she was nine years of age. That she spoke at even this late day was due to the effort of her mother who insisted upon sending her to school and enlisted the services of her brothers and sisters in trying to teach her to speak. The mother reports that in both cases the children at birth had a thin membrane over the vocal cords. Physicians who were appealed to would not operate on the older boy but advised the mother to teach the child to imitate her in making gruff, forcible sounds, thereby forcibly expelling the air from the lungs in the hope of breaking this membrane. The membrane broke when the child was three years of age and his mother then taught him to speak. His halting speech soon became stuttering. This was very pronounced at the time when he became a member of the Speech Improvement Class at the age of twelve. Within a year his speech was corrected and he is now doing excellent work in high school.

Edward, the younger child, uttered no sound, even when in distress during the first week of his life. He then sneezed violently for a whole day and this caused the membrane over the vocal cords to break. He did not speak until six years of age and then used such jargon that even his mother had difficulty in understanding him. At nine years when he was in the 5th grade he became a member of the Speech Improvement Class and in less than ten weeks spoke much better than the average child of his age. The principal means of correction used was teaching him to place the oral organs in the correct position for the production of each sound. He worked diligently to overcome his defective speech and manifested great pride in his correct speech. He has surpassed his classmates in scholarship and graduated last June at the age of thirteen years.

Case 6. Henry, age 9, was in the mentally defective class, having been placed there following a physician's examination. He used a jargon which no one but his mother could understand. Owing to his inability to speak it was difficult to determine his mental capacity. It was decided to give him the benefit of the speech training. A diagnosis showed that he lacked muscular co-ordination and of course this extended to his speech muscles. He seldom attempted speech because he could not be understood. His progress was slow as his muscular system had to be

trained. The motor side of speech was given particular attention and slowly but surely Henry has learned to talk. He speaks, reads, spells and recites poetry or other memory selections almost as well as his classmates, but this accomplishment has taken nearly three years. His speech is slow owing to the slow muscular co-ordination but this boy has, through the training in speech, been raised from the grade of the mentally defective to a life of usefulness.

While many other cases might be cited these are sufficient to show the result not only in corrected speech but in the great upbuilding of character due to speech training.

Special Training for the Correction of Speech Defects. Shortly after James (Case 1) had left school, Mr. John F. Reigart became the principal of Public School No. 166, New York City, where I was teaching. As principal of Public School No. 2 Mr. Reigart had had a class for the correction of speech defects, and the experiments had shown such good results that he decided to organize a similar class in Public School No. 166. I was the teacher selected to have charge of this work. Under Mr. Reigart's direction I made a study of the science, principles and psychology of speech. This special study of speech and its far-reaching effect upon the life of the child brought me to a clear realization that the failure of my former attempts to correct stuttering was due to the following causes:

1. I had had too narrow a view of the subject in dealing with stuttering and not with speech.
2. I had depended upon imitation and tricks of speech instead of upon the upbuilding of correct habits of speech.
3. I had not realized that defective speech and not defective mentality had, in the case of stutterers, been responsible for their retardation in school and elimination from school. A limitation had been placed upon their use of language and their investigation in the field of language through their defective speech.
4. I had failed to note that for years we had been thrusting leisure upon the stutterer by excusing him from all oral work and had not taught him to use that time for self-improvement.
5. I had not seen that we had been responsible for the weakening of the stutterer's character by relieving him of all sense of responsibility for that large amount of time and that large part of his education which oral recitation covers in his school life and by depriving him of the numerous opportunities for exercising his judgment and will power during those years of excuse from oral work.

6. It had not occurred to me that the school is responsible for developing a non-social being by fostering the idea that the stutterer is different from other children by setting him apart from others and not requiring or even allowing him to take his place among his classmates.

In short, I had not seen that the confirmed stutterer is a victim of our unconscious training in incorrect, dangerous habits through our neglect in training in correct speech habits from the beginning of his school life.

Referring back to James (Case 1) my regret is none the less keen because I am able to account for the career which he has followed since he left school about four years ago. There is little consolation in the fact that his education is inadequate for him to hold a position which he realizes his natural ability should enable him to hold; nor, in the fact that his will power is so weak that he lacks courage to seek other employment; nor, yet in the fact that not knowing how to make use of his leisure for self-improvement he has become a corner loafer and, under the influence of evil companions, is fast developing into one of our notorious gangsters.

This is by no means an unusual case among stutterers who have become discouraged through repeated failure in attempts to correct their stuttering. But this particular case had much to do with my speech improvement work because through it I had proved to myself the futility of empiric work and having had the opportunity of following the boy's career after he left school I was determined to do my utmost to prevent others similarly afflicted from following in this boy's footsteps.

THE ORGANIZATION OF THE WORK

Selection of Pupils for the Speech Class. We selected the stutterers from the higher classes because in the first place their defect was plainly apparent; secondly, their time in school was limited; lastly, younger children will gladly become members of a class organized for older children while the older children could be induced to join a class established for young children only with the greatest of difficulty.

Name of Class. We called it *The Speech Improvement Class*. Pupils would not hesitate to join this class because only improvement was suggested. The name gave a dignity to the work and did not limit it to any particular class of speech defects.

Grouping of Children According to Speech Defects. Classes for correcting other speech defects were next organized from the higher grades, then other classes from lower grades in groups according to defects until now the work is thoroughly organized and graded.

Co-operation with Speech Clinic. Each member of the Speech Class is examined by a physician, a speech specialist, and is placed under proper treatment for nose, throat, nerves or for other physical ailments upon the suggestion of this medical practitioner to the parents. He is then given the training in the Speech Class.

Method. In the Speech Improvement Class we aim to teach correct habits of speech through training in breath, voice, articulation, rhythm and modulation. Through exercises in breathing we train in breath control and breath support. During exhalation the vowel sounds are produced and the children are taught to group the vowels and take a catch breath between the groups. This is the underlying work for phrasing in speech and is carried over into reading and conversation. In articulation the correct position of the oral organs for the production of each sound is taught. Through exercises in tongue gymnastics the children are trained to respond accurately to directions, making imitation and manipulation of the oral organs unnecessary.

As the stutterer is lacking in the rhythm of speech, exercises in rhythm are given. We work at rhythm through physical exercises, breathing exercises and phrasing and not through beating time.

For producing flexibility of the voice modulation exercises are given. Pupils are trained in the modulation of natural speech with as little exaggeration as possible. No forms of rhythm or modulation which tend to attract the attention of other pupils to the sufferer are employed. Ear training is fundamental in all speech exercises.

Speech Work with Mentally Defectives. The work with the mentally defectives is similar to that with normal children but is much slower. It is carried on in their own class room. We aim to keep the self-respect of the normal child by keeping the mentally defective children out of the regular speech class.

Relation of Medical to School Side. The school gathers the cases and turns them over to the physician in the speech clinic. Previously the history of each case is obtained and a preparatory diagnosis is made. Attention is drawn to the influence of speech defects on the general physical condition of the child. The child is placed under the physician's care for treatment for the upbuilding of the general health, the care of the nose, throat, teeth and nerves. The specific work of the school consists in training in correct speech habits.

Hindrances to the Work.

I. The discouragement of the pupils and parents. Most of the cases which come to me have been worked upon before by doctors, tutors, or in a school for stutterers. They are skeptical of the results to be obtained.

2. The misleading advice of physicians, friends, and even teachers who recall all they have ever heard about in trying to correct stutterers.

3. The indifference of parents and teachers. While they do recognize the most serious defects they do not recognize the majority of defects. They have been told that the child will outgrow them, and they do not realize that even if he does outgrow them he is in danger of becoming backward through lack of reading.

4. The strenuous attitude of parents and teachers in scolding and nagging the sufferer.

5. Overcoming the indifferent attitude of teachers because they do not realize that these children are backward and that the correction of their defective speech does not bring them up in scholarship immediately but that it does give them the means by which they can do and recover their lost ground. The teacher overlooks the steady improvement which the child is making in both speech and scholarship, but because he is not up to grade she keeps on talking of his poor spelling, poor reading and poor speech, thus tending to keep him discouraged.

6. Overcoming the fact that these children are in a negative state. At first, the boys of the school called the class the Stuttering Class, and me the Stuttering Teacher, but we have gained the coöperation of teachers and pupils so that all pupils in the school are interested in the progress of the class. Not only throughout the school but throughout the city as well the class is now called "The Speech Improvement Class."

7. The old environment. It is very difficult to make correct speech a permanent habit outside of school even when the pupil speaks correctly in the presence of his teacher.

8. The chief hindrance is the child himself. The teacher must gain the confidence and will of the pupil and must control school and home conditions.

Stuttering as a School Problem. The correction of stuttering is a school problem. There is the medical problem also. The medical practitioner deals with the individual and in a short time. This necessitates using imitation, manipulation and medicine. The school recognizes speech defects as incorrect speech habits and aims to overcome them by building up correct habits of speech. As a child must remain in school a number of years there is no need of forcing the child in his work and his progress is natural and steady. This usually results in complete correction of his speech defects. The school has the advantage of being able to follow up these cases throughout the school life of the child. This is a great advantage over the medical practitioner who is, in a sense,

at the mercy of his patients, for he cannot compel them to accept his assistance after they have decided to discontinue the work and he is not able to follow them up after he has completed his cure.

The New York Plan.

1. A school is designated as a Speech Center.
2. Candidates for the Speech Class are transferred to this school and are registered in their appropriate grades reporting to the Speech Class daily.
3. A teacher who has been trained in the correction of speech defects is placed in charge of the class.
4. The Board of Education has transferred especially selected, experienced teachers to this school for the purpose of observation and training in the correction of speech defects.
5. As quickly as teachers are trained new speech centers are opened.
6. This year the work will be introduced into the New York Training School for Teachers.

Recommendations to Continue and Broaden the Work.

1. There should be an investigation as to the number and types of speech defects found in public schools.
2. Classes should be formed as quickly as teachers can be trained.
3. Speech improvement should be part of the regular school work.
4. The various types of defective speech should be studied as to the teeth, jaw, types of nervous temperament and hereditary tendencies.
5. There should be a medical specialist who is also a speech specialist in connection with the school.
6. There should be a speech clinic in connection with the school.
7. Provision should be made for the physical upbuilding of the pupils by seeing that they are provided with nourishing food and that they are sent to the country or otherwise cared for.
8. An investigation of the methods of teaching used in the lower grades should be made to determine why so many pupils begin to stutter after entering school life.
9. As prevention is better than cure all children should be given a thorough speech training from the beginning of school life as a sound basis for all future language work.

INVESTIGACIONES SOBRE LAS CAUSAS DE LA INATENCION DE LOS NIÑOS

POR

JOSÉ JESÚS GONZALEZ

En todo grupo escolar hay un número mas o menos grande de alumnos que se distraen con la mayor facilidad, que, mientras el profesor se afana en sus explicaciones, ellos dejan vagar sus miradas sin imprimirles dirección o juegan con lapiceros o platican con sus camaradas o permanecen indiferentes a cuanto les rodea. En vano es que el maestro les llame la atención y los haga, por cortos momentos, concentrar su espíritu en la lección que se explica: pronto se aflojará su atención, volviendo a las andadas.

No solamente quedan rezagados tales alumnos, sino que constituyen un serio obstáculo a la disciplina y buena marcha de la enseñanza, mereciendo, por lo tanto, un detenido estudio las causas que originan tal proclividad a la inatención.

Deseando conocer dichas causas y convencido que deben variar un tanto con las diversas condiciones sociales, medio escolar, etc., en que se desarrollen los alumnos, he emprendido una serie de investigaciones, ocupándome principalmente del lado *práctico* de la cuestión y sólo emprendiendo los exámenes psicológicos y fisiológicos más indispensables para descubrir en cada caso las causas de la inatención.

Para llevar a cabo mis investigaciones rogué a varios directores de de escuelas -tanto de las frecuentadas por los niños acomodados, como las que educan los hijos del pueblo- que, entre sus alumnos, me escogieran la flor y nata de la pereza, es decir, los niños que se distinguieran por su desaplicación, por su pereza y por su inatención durante las lecciones.

A cada uno de esos alumnos he practicado un detenido examen clínico y después un estudio psicológico; cuando ni el estado de salud física ni el estado de salud mental del alumno, me revelaban la causa de su inatención y pereza, emprendía una investigación sobre las condiciones del medio escolar -higiene del edificio y mobiliario, programas, etc.,—donde muchas veces encontré la causa de verdaderas *epidemias* de inatención entre los alumnos de algunas escuelas; y si no descubría la causa del mal, que iba buscando, ni en el alumno ni en la escuela, procuraba averiguar cuales eran las condiciones del medio familiar en que vivía el niño desaplicado e inatento.

Deseando limitar en lo posible las dimensiones de este trabajo, voy a condensar el resultado de mis investigaciones.

La causa de la inatención y pereza de los niños radica:

- en el niño mismo;
- en el medio escolar;
- en el medio familiar.

Por parte del niño:

- a) en su salud física;
- b) en su salud mental.

Por parte del medio escolar:

- a) en las condiciones del edificio y mobiliario;
- b) en los programas;
- c) en el profesor.

Por parte del medio familiar:

- a) malos hábitos de los padres y, como consecuencia, abandono de los niños;
- b) indisciplina en la familia o mimo excesivo;
- c) mala alimentación y excesiva pobreza.

Permitidme una pequeña digresión: la observación enseña que para tener despierta la atención se requieren: por lo que respecta al asunto mismo que solicita la atención, es decir, a lo objetivo, que sea inteligible y que interese; y en cuanto a lo subjetivo, al sujeto mismo que aplica su atención. que tenga la energía, la fuerza suficiente para sostener la atención, que ningún objeto exterior, ni malestar o inquietud íntimos lo distraigan hacia otros puntos que el de estudio. Esta sencilla observación es fecundísima para el estudio del tema que desarrolla esta disertación y, en el curso de ella, frecuentemente tenemos que aprovecharla.

Entremos ahora a detallar lo que nos enseña la investigación de las causas de la inatención y pereza de los niños.

Por lo que respecta *al niño mismo*, acabo de indicar que la inatención puede ser debida: a) a perturbaciones de la salud física; b) a perturbaciones de la salud mental.

En efecto: un niño que no ve bien, sea por lesiones oculares o defectos de refracción; que no oye lo que el maestro explica; que, por tartamudez u otra perturbación en la articulación de las palabras, no puede leer correctamente, no se interesará en la lección y, no interesándose en ella, se distraerá facilísimamente.

Otros niños, convalecientes de enfermedades graves o en el prodromo de ellas, o víctimas de anemias profundas, o debilitados por un rápido crecimiento o el despertar, -como sucede principalmente a las niños- de la pubertad, no tendrá fuerza suficiente para sostener cualquier trabajo prolongado y su organismo languideciente huirá del esfuerzo.

Otros alumnos, incomodados por perturbaciones digestivas, sobre todo a la hora en que esa función se ejercita, o apenados por movimientos

coreicos o ticosos, tendrán su atención prisionera de su malestar y, por lo mismo, se encontrarán incapaces de fijarla sobre las lecciones.

Facilmente se comprende que no siempre se dificultará la atención, que, si en unos niños la inatención es en todas las clases, en otros no se presentará sino en determinadas horas (después de las comidas, por ejemplo) o para determinadas clases (explicación en el pizarrón para los miopes, lecciones orales para los sordos, lectura para los tartamudos, gimnasia para los débiles musculares, etc.). Son, en tales casos, niños inatentos, perezosos, desaplicados parciales. La *selección* del asunto para que sobrevenga la inatención, es ya un precioso elemento *diagnóstico* de la causa que la produce e indicadora del mejor medio terapéutico para combatirla.

Las perturbaciones psíquicas del niño, en todos sus matices, desde las más ligeras y apenas perceptibles, hasta las más profundas y para todos apreciables, son fuente inagotable de inatención de los niños y su estudio entra de lleno en el de los *niños anormales*, *feeblemindeds*, que no es mi propósito desarrollar aquí, y que, por lo mismo, esbozaré tan sólo.

De las tres grandes clases en que pueden agruparse los anormales mentales: los *idiotas* (cuyas facultades psíquicas son cuantitativa y cualitativamente atacadas en conjunto), los *imbéciles* (que sólo presentan perturbaciones lacunares o parciales en las esferas moral, intelectual y afectiva) y los *débiles de espíritu* o retardados mentales, son estos últimos los que más nos interesan en estos momentos; pues, mientras los idiotas e imbéciles no concurren a las escuelas comunes, sino que requieren escuelas especialísimas y aun métodos educativos que sólo pueden practicarse en sanatorios y hospicios, los débiles mentales pueblan, por decirlo así, nuestras escuelas.

Todos los observadores están acordes en formar dos clases completamente distintas de débiles mentales: los *apáticos o pasivos* y los *agitados o indisciplinados e inestables*.

Los niños de uno y otro grupo adolecen de debilitamiento de la atención: unos, porque su apatía y flojedad los hace incapaces del esfuerzo necesario para sostener la atención; otros, porque su agitación continua, su inestabilidad, los imposibilita para quedar por algunos minutos fijos en una sola cuestión. Son, pues, los débiles mentales los mas inatentos de la clase, defecto que se acrecienta con las demás perturbaciones psíquicas que padecen estos niños: disminución de la memoria, que los hace olvidar las lecciones anteriores y, por lo mismo, les dificulta las siguientes o se las hace ininteligibles; variabilidad en la actividad intelectual y, sobre todo, rápida fatiga mental, que hace que en el niño, atento al principio de las clases, sea incapaz de atención al fin de ellas.

El *medio escolar* es también un factor de la mayor importancia en la atención de los escolares.

En mis investigaciones sobre las causas de la inatención, me he encontrado con los hechos siguientes:

En una escuela de niñas, en un salón de clase que contenía doble número de educandas al que debía contener, era de verse todas las tardes cómo la mayor parte de las pequeñuelas, aun de las más inteligentes y aplicadas, se convertían en indiferentes y desplacadas, en soñolientas y apáticas, durante las últimas horas de clase. La señorita profesora quejose conmigo de lo acontecido, visité su salón a la hora que podríamos llamar de la pereza, y... me convencí que aquellas niñas no eran unas desaplicadas, sino unas *intoxicadas*, pues la atmósfera del salón *era irrespirable* por lo caliente, lo pesada y lo fétida. Despejamos el salón, hicimos que las niñas se recrearan un rato, mientras su salón se ventilaba, y luego volvieron a su clase: todas estuvieron atentas.

En otra escuela recién abierta hubo un ingreso de alumnos mayor del que se esperaba, y algunos pequeñines tenían que permanecer en pie durante las lecciones; esos pobres niños, atentos de por sí, en las primeras horas de clase, desatendían completamente en las últimas, cuando el cansancio físico los incapacitaba para el esfuerzo mental: bastó que llegaran a la escuela los mesa-bancos pedidos y que aquellos alumnos tuvieran cómodo asiento, para que desapareciera la *inatención intermitente*. Como las circunstancias obligan a veces a los maestros a colocar tres niños en mesa-bancos binarios, he observado también entonces, como fruto esperado, la frecuente inatención de esos niños que se encuentran incómodos.

Es de las más notables la influencia de los programas y de los profesores sobre la atención de los alumnos.

En cuanto a los programas, son causa frecuente de inatención, por el esfuerzo que exigen o por el poco interés que despiertan, cuando están muy recargados de materias, o cuando, no teniendo en cuenta el desarrollo mental de los alumnos, colocan en los primeros años materias incomprensibles a la edad de aquellos, o bien no cuidan que la distribución de materias sea de modo que las más difíciles, las de coeficiente ponogenético mas elevado - como el cálculo se estudien en las primeras horas del día, cuando el cerebro de los niños, después del reposo de la noche, se encuentre más despejado, mientras las más fáciles - dibujo, historia natural, etc.,—se expliquen en las horas más pesadas, como después de los alimentos o en las últimas horas de la mañana o de la tarde, cuando se está fatigado ya.

La influencia del profesor sobre la atención de los alumnos es indiscutible: ¿quien no recuerda el dulce atractivo de la palabra de alguno

de sus maestros, que sabe adueñarse de la atención de sus oyentes y tenerla prisionera, esclava del tema de la lección, sin producir en ella la menor fatiga, antes bien acrecentando a cada momento más y más el interés, de modo que transcurrida la hora de clase no se ha advertido la marcha del tiempo y se queda deseoso de seguir trabajando? ¿quien, por el contrario, no sintió con frecuencia cierta indómita repulsión hacia las explicaciones de otros maestros?

Aparte de esas cualidades mentales, que no se pueden definir ni precisar, que hacen de los hombres buenos o malos educadores, pueden los maestros padecer defectos de pronunciación o de emisión de las palabras que -dificultando la inteligencia de lo que el profesor explica— hacen que la atención se disipe y la distracción sea endémica en la clase. Un asunto, explicado con tono monótono y pesado, derrama invencible sopor sobre los alumnos: ¿quien no sabe que un ruido suave y continuo es hipnógeno? ¿qué otra cosa es el arrullo materno en la cuna?

El orden en la exposición del tema de la clase, el método en su desarrollo, la claridad de lenguaje, las oportunas demostraciones prácticas, etc., son otros tantos factores que mantienen viva y despierta la atención.

La buena elección de un maestro es asunto de la mayor importancia.

Hemos dicho que el *medio familiar* influye también en la atención que el niño desplegará en la escuela.

Los hijos de alcohólicos y viciosos son generalmente desaplicados, no sólo por la tara hereditaria que traen, sino por el mal ejemplo que en su casa reciben, por el abandono en que crecen y el mal trato de que son víctimas. La indisciplina que reina en la familia se reflejará en los actos escolares, y la poca disciplina que adquiera en la escuela se disipará en el hogar.

Por el contrario, los niños excesivamente mimados, a quienes se consienten todas las faltas y se satisfacen todas los gustos y antojos, no están acostumbrados a esfuerzos de ninguna clase y, por lo mismo, serán incapaces del esfuerzo sostenido que exige la atención.

Por otra parte, un niño que en su casa sufre los rigores de la miseria, que llega a la escuela sin haber tomado alimentos, con la pena, vaga aún para su conciencia infantil, de ver a sus padres angustiados, y la languidez propia de la desnutrición ¿cómo podrá tener el ánimo despierto para las lecciones? ¿cómo podrá sostener la atención, él, que casi desfallece?

En las escuelas de los barrios pobres encuéntranse, por desgracia, ejemplares innumerables de los desaplicados de esta clase, el remedio de cuya inatención requiere la solución de intrincados problemas sociológicos.

Sucede cosa semejante con los niños que, aunque regularmente alimentados, necesitan trabajar para ayudar a sus padres, a subvenir a sus necesidades: ya llegan a la escuela fatigados, y no hay que olvidar que la fatiga física -como fatiga nerviosa que es- vuelve también inepto para el trabajo mental.

Para poder dar una ojeada de conjunto a todas las causas de inatención y pereza de los niños, doy su resúmen en el cuadro adjunto.

CAUSAS DE LA INATENCIÓN DE LOS NIÑOS.

Dependientes del niño mismo:	Por perturbaciones en su salud física:	<ul style="list-style-type: none"> Defectos de la vista. id del oído. id de la palabra. Enfermedades generales: anemia, rápido crecimiento, prodromos o convalescencia de enfermedades infecciosas, pubertad, etc. Enfermedades locales de repercusión general: vegetaciones adenoides, etc. Enfermedades locales: nerviosas (corea, tic, histeria, etc.), digestivas, respiratorias, etc.
	Por perturbaciones en su estado mental:	<ul style="list-style-type: none"> Idiotas. Imbéciles. Débiles mentales: apáticos, inestables, amorales y viciosos.
Dependientes del medio escolar:	Por salones de clase:	<ul style="list-style-type: none"> Mal ventilados. Mal alumbrados. Demasiado grandes o demasiado pequeños. En la proximidad de lugares de reunión, de paseos; porque distraen a los niños.
	Por el mobiliario:	<ul style="list-style-type: none"> Insuficiente.
	Por programas:	<ul style="list-style-type: none"> No adaptado a la estatura de los niños. Sobrecargados de materias. Mal distribuídos: clases fáciles en la mañana y difíciles en la tarde. Inadecuados a la edad de los alumnos.
	Por los maestros:	<ul style="list-style-type: none"> Con defectos de pronunciación. Con mal método en la enseñanza, etc.
Dependientes del medio familiar:	Padres viciosos.	
	Demasiado mimó hacia los niños.	
	Indisciplina en el hogar.	
	Mala alimentación.	
	Necesidad de trabajar.	

Esta rápida ojeada sobre las causas, nos pone en aptitud de señalar los *remedios*, aunque sea muy a la ligera.

Desde luego, la enorme influencia que el medio escolar tiene sobre la buena atención de los niños y su aprovechamiento, aprovechamiento que redundará en beneficio de la sociedad, hace que todo esfuerzo en pró del perfeccionamiento de la higiene escolar, en su mas amplia acepción (comprendiendo edificios, mobiliario, programas, etc.), no solamente se tenga como laudable, sino que merezca toda la ayuda de autoridades locales y gobiernos generales.

Nos quejamos -sobre todo en nuestros países latinos- del poco fruto de la escuela: empecemos por llenar en esa escuela las condiciones higiénicas que la salud pública y la humanidad exigen, y pronto veremos crecer y madurar los frutos.

Por otra parte: adolecemos del defecto de condecorar con el pomposo título de maestros, a individuos poco o nada preparados para el magisterio. Ya es tiempo de que surjan en nuestro país numerosas y perfectas escuelas normales que sepan despertar la vocación en muchos que ignoran tenerla, y puedan orientar esa vocación de la mejor manera posible. Se nace maestro como se nace poeta; pero esa facultad innata para la enseñanza, requiere una larga preparación y una educación esmerada. En la capital de mi país (México) existen dos buenas escuelas para maestros, así como en Guadalajara, Puebla, Mérida, Jalapa, y otras capitales; pero en muchos Estados de la Federación Mexicana carecemos de esos semilleros, de esos semilleros de maestros que sepan educar a nuestro pueblo indómito y bravío, cuyas energías, bien encauzadas, darán gloria a la patria y utilidad al mundo.

En otros países se tacha a nuestro pueblo de abandonado y perezoso y -es fuerza confesarlo- si es cierto que es muy resistente para el trabajo, es en él, en cambio, poco metódico y poco disciplinado. Y esto es natural: la escuela no tiene mas objeto que formar hombres para la vida práctica; si la escuela no educa bien una de las facultades directoras del trabajo, *como es la atención*, esa ineducación tendrá que reflejarse en la vida, en la lucha diaria.

Si ponemos esmero en mantener despierta y educar la atención de los alumnos de nuestras escuelas, tendremos pronto obreros que dediquen mayor atención y hagan con más cuidado su trabajo.

Y para educar la atención *es preciso antes formar buenos educadores*. Los hay ya excelentes; pero para nuestro extenso territorio, ¡cuantos millares más se necesitan!

En el cuadro que os presento pueden verse, entre las causas de inatención, enfermedades y defectos, como los de la vista, fáciles de descubrir y de corregir cuando existe la inspección médica escolar: en el Distrito Federal (México) existe una organización ideal del servicio

higiénico de las escuelas; en el Estado de Guanajuato hemos logrado, debido a los esfuerzos del actual Director General de Educación, ver establecida en casi todas las ciudades una incipiente inspección médica escolar; pero aun falta mucho por hacer en nuestro extenso y hermoso país: ¡ojalá que reuniones como estas sean -como el rayo de sol para la semilla oculta en el surco- las que hagan germinar en muchos de nuestros Estados la idea de organizar el servicio higiénico de sus escuelas!

El establecimiento de escuelas especiales para anormales mentales es indispensable para educar la atención de esos débiles mentales cuya atención está poco despierta o es muy fatigable.

En este estudio de los remedios de la inatención y pereza de los niños, hay un abismo al cual sólo puede asomarse el observador y cuya lobreguez le hace retroceder espantado: ese abismo es la maléfica influencia del medio familiar y social.

¿Cómo, en efecto, luchar contra el devastador alcoholismo, pulpo que chupa las energías de nuestras multitudes obreras? ¿cómo luchar contra la miseria, fruto, las mas veces, del ningún hábito de ahorro de nuestros artesanos?

Aquí surgen problemas cuya solución requiere profundo estudio de parte de nuestros sociólogos.

Y por un círculo vicioso, frecuente en la historia humana, es la escuela la llamada principalmente a remediar estos males que perjudican la labor de la escuela.

Es en la escuela donde deben inculcarse hábitos de templanza y ahorro; es en la escuela donde deben empezarse la mas ruda campaña anti-alcohólica y echarse los cimientos de la costumbre de economizar, por medio de la implantación de las cajas escolares de ahorros.

Y con esto, si no la escuela de hoy, sí la escuela de mañana, verá disminuir notablemente el número de sus alumnos inatentos, perezosos y desaplicados; pues sin alcoholismo y con ahorro, disminuirá forzosísimamente esa cohorte de niños desmedrados y famélicos que puebla ahora nuestras aulas.

Entre tanto, empenémosnos en que se generalicen los comedores escolares, donde el niño encuentre a muy bajo precio o gratuitamente, según los casos, el alimento que no pudo recibir en su hogar y la falta del cual le hace languidecer en la escuela y desatender sus lecciones.

Es una obra patriótica y de humanidad.

DIE FRAGE DER GEISTIGEN ERMÜDUNG DER SCHULKINDER

VON

THEODOR ALTSCHUL

Es ist der dritte schulhygienische Kongress, bei welchem ich dasselbe Thema: "die geistige Übermüdung der Schulkinder" zum Gegenstande meines Vortrages wähle. Diese Beharrlichkeit in der Wahl des Gegenstandes bedarf einer gewissen Rechtfertigung. Sie ist aber leicht durchzuführen. In Nürnberg (1904) habe ich den ganzen Fragenkomplex mehr theoretisch beleuchtet, in London (1907) habe ich kurz über eigene ästhesiometrische Untersuchungen berichtet, welche meine theoretischen Bedenken gegen die "Erdmüdmungsmessungen" vollauf bestätigt haben. Inzwischen habe ich in einer grössern Arbeit: "Die geistige Ermüdung der Schuljugend, Ermüdungsmessungen und ihre historische Entwicklung" (Zeitschrift für Hygiene und Infektionskrankheiten, 69. Band, Verlag von Veit & Comp., Leipzig) die gesamte Frage und auch die umfangreiche Literatur im Zusammenhange erörtert und die genauen Protokolle meiner eigenen Untersuchungen veröffentlicht. Wenn ich trotzdem bei dem diesmaligen Kongress in Buffalo nochmals auf das zum grossen Teile bereits von mir gesagte zurueckkomme, so geschieht das aus dem Grunde, weil die überaus wichtige schulhygienische Frage der Ermüdung der Schuljugend durch den Unterricht, eine Frage, die durch mehr als ein Jahrzehnt viel umstritten war und die Gemüter der Schulhygieniker und Pädagogen mächtig erregt hat, gegenwärtig zu einem gewissen Abschluss gelangt ist, der im wesentlichen auf das hinausläuft, was ich seit dem Jahre 1894 (wo ich meine erste Arbeit über das fragliche Thema in der "Wiener medizinischen Wochenschrift: "Die Frage der Überbürdung unserer Schuljugend vom ärztlichen Standpunkte" veröffentlichte) mit Zähigkeit verfochten habe.

Zu dieser Zeit war die Ermüdungsfrage als "Überbürdungsfrage" Gegenstand der eingehendsten Diskussion in Fachkreisen gewesen. Die verschiedensten psychologischen und physiologischen Methoden der "Ermüdungsmessungen" schossen wie die Pilze hervor und alle "bewiesen," was man damals gegen die herrschende humanistische Unterrichtsmethode unserer Mittelschüler und in dem einmütigen Rufe nach einer zeitgemässen Schulreform schon a priori als sicherstehend angenommen hatte: die geistige Übermüdung unserer Schuljugend. Die anfänglich vereinzelt dastehenden Gegner dieser Ansicht, so z. B. Czerny in Breslau, der eine Übermüdung durch den Schulunterricht bei

gesunden Schülern überhaupt nicht anerkannte, wurden von den zahlreichen Anhängern der damals mit suggestiver Kraft zur Herrschaft gelangten Lehre von der "Überbürdung" der Schuljugend niedergestimmt und mir ging es ebenso.

Es ist ein Glück für Fortschritt und Wissenschaft, dass Wahrheiten, auch wenn sie Anfangs nur von wenigen verteidigt werden, sich endlich doch siegreich durchringen und so wurde von Jahr zu Jahr die Zahl der Anhänger der Überbürdungs-Hypothese geringer, das Wort "Überbürdung" verschwand endlich von der Bildfläche und wurde abgelöst von dem Schlagwort: "Geistige Ermüdung," die—so behauptete man—sich direkt *messen* lasse und daher tatsächlich vorhanden sein müsse. Die Ermüdung sei aber von Schaden für die Gesundheit der Schuljugend und müsse daher als unzulässig bekämpft werden, es müsse eine Unterrichtsreform mit bedeutender Herabsetzung der Forderungen geistiger Arbeit Platz greifen. Eine literarische Hochflut über diese "Reformen" brach herein, die fast alle mit sich fortriss und wer diese Massenproduktion durchstudierte und die übereinstimmenden Schlussfolgerungen als beweisend ansah, musste zu dem Glauben kommen, dass all die armen Geschöpfe, welche nach der bisherigen Methode unterrichtet wurden, unfehlbar dem geistigen Verfall entgegengetrieben werden.

Aber all diesen mehr weniger gelehrten Abhandlungen zum Trotz, ging der geistige Fortschritt der Menschheit weiter und gerade unsere so viel gelästerte Zeitepoche brachte in den Naturwissenschaften und in der Technik die grossartigsten und bewunderungswürdigsten Entdeckungen und Erfindungen hervor. Da kann die geistige Verkrüppelung durch die gegenwärtigen Unterrichtsmethoden denn doch keine so allgemeine sein, wie es die meisten der zahllosen Schulreformer zur Begründung ihrer Vorschläge behauptet haben, womit natürlich nicht gesagt sein soll, dass eine Unterrichtsreform überhaupt nicht nötig sei. Die Reform ist aber nicht wegen der "Überbürdung" oder "Ermüdung" der Schüler notwendig, sondern aus ganz andern Gründen, auf die ich noch zurueckkommen werde.

Es ist überaus bezeichnend, dass in jüngster Zeit das ehemals so beliebte Thema: "Überbürdung" oder "geistige Ermüdung" so ganz aus der Mode gekommen zu sein scheint und dass namentlich die "Ermüdungsmessungen" viel von ihrem Zauber verloren haben und nicht mehr jene suggestive Anziehungskraft ausüben, wie früher; die Literatur der neuesten Zeit ist ungemein arm an Publikationen, welche Ermüdungsmessungen bei Schülern zum Gegenstand haben.

Im VIII Bande No. 4 (November, 1912) des Archivs f. Schulhygiene veröffentlicht J. Brandau einen Artikel: "Einfluss der kalten Füße auf die Geistestätigkeit von Schulkindern". Er hat zur Be-

kräftigung seiner, gewiss nicht auf alle Ärzte überzeugend wirkenden Anschauung, dass "habituelle Kälte der Füße Zirkulationsstörungen in den Hirngefäßen und dadurch eine gewisse Anämie, eine mangelhafte Ernährung und bei längerer Dauer eine geringere Leistungsfähigkeit desselben (des Gehirns) bewirkt und möglicherweise der Anhäufung von Ermüdungsstoffen und mancherlei Anomalien der Blutwischung Vorschub geleistet wird," auch ästhesiometrische Untersuchungen herangezogen.

Er behauptet, dass "wie die Vergrößerung der ästhesiometrischen Schwellen zeigt, das Unterscheidungsvermögen für taktile Eindrücke herabgesetzt und die in Aufmerksamkeit, Auffassungs- und Urteilsvermögen sowie in den Leistungen im Schulunterricht zum Ausdruck kommende geistige Betätigung empfindlich geschädigt wird." Er hebt hervor, dass meine Nachprüfungen der ästhesiometrischen Methode "wenig vertrauenerweckend" sind. Ich werde mich nicht auf eine Polemik einlassen; ich will nur darauf hinweisen, dass *Brandau*, wenn seine Schlussfolgerungen richtig wären (was hiermit durchaus nicht zugegeben sei) eigentlich nur bewiesen hätte, dass die Ästhesiometrie nicht nur die durch den Unterricht und die geistige Überanstrengung erzeugte unzulässige *Ermüdung* anzeigt, sondern auch andere durch rein *somatische* Veränderungen (Schweissfüße) hervorgerufene Zustände. Damit ist aber der Wert der ästhesiometrischen Methode als ein Mass für die "geistige Überbürdung" natürlich nicht gestiegen, sondern im Gegenteil wesentlich vermindert, weil dadurch bewiesen wird, dass "die Aufmerksamkeit, das Auffassungs- und Urteilsvermögen" nicht nur durch eine geistige Überanstrengung, sondern auch durch *körperliche* Krankheiten herabgesetzt wird, eine Tatsache die niemand leugnen wird und auf die ich schon u. a. in Nürnberg hingewiesen habe. *Brandau* hat sonach der Ästhesiometrie eigentlich keinen guten Dienst geleistet und ich habe keinen Grund, mein Urteil über den Wert der Ermüdungsmessungen, wie ich es in meinen bisherigen Schriften begründet habe, zu ändern.

Die Kenotoxin-Theorie von *Weichardt*, die zweifellos auf einer wissenschaftlichen Basis aufgebaut ist, hat viel Bestechendes an sich. Es ist immerhin merkwürdig und nach einer gewissen Richtung hin auch bedauerlich, dass sie so wenig nachgeprüft wurde. *Konrich* hat in seinem Vortrage: "Zur Frage der Ermüdungsmessungen und der Wirksamkeit des Weichardt'sen Antikenotoxins" gelegentlich der XII Hauptversammlung des Deutschen Vereines für Schulgesundheitspflege (Berlin, 1912) eigentlich mehr die Wirksamkeit des Antikenotoxins bekämpft und nicht das Ermüdungsproblem erörtert, seine Nachprüfungen beziehen sich demnach auf eine Seite der Frage, die für mein Thema nicht so sehr in Betracht kommt; ich muss daher

hier nicht näher auf *Konrichs* Vortrag (und die spätere Polemik von *Lorentz* in der Zeitschrift für Schulgesundheitspflege) eingehen.

Der gegenwärtige Stand der Kenotoxinlehre ist aber ausserdem ein solcher, dass sie gewiss eine interessante Theorie darstellt, die man weiter verfolgen sollte, als *Mass* einer geistigen Ermüdung und vollends einer unzulässigen geistigen Überlastung der Schuljugend durch den Unterricht kommt sie- wenigstens vorläufig- nicht in Frage. Es ist übrigens hoch an der Zeit dass wir uns von der bisher gar zu übertriebenen Furcht vor der Ermüdung emanzipieren. Die Ermüdung an sich ist überhaupt keine pathologische Erscheinung, sie ist die physiologische Reaktion auf jede maximale körperliche und geistige Arbeit, sie ist aber auch gleichzeitig eine Art Sicherheitsventil, indem durch das Eintreten der Ermüdung eine übermässige körperliche oder geistige Kraftleistung und dadurch auch eine Überlastung der Funktion der in Frage kommenden Organe bis zu einem gewissen Grade verhindert wird. Wofür wir, besonders bei der Schuljugend, Sorge zu tragen haben, ist, dass der angestregten Arbeit eine entsprechend lang währende Ruhe folgt und dass namentlich die Schlafdauer der Schüler nicht zu sehr gekürzt wird. Wird diese Forderung eingehalten, dann stellt die Ausnützung der Arbeitskraft bis zur Ermüdung bei *gesunden Individuen* sogar eine Übung dar, welche die spätere Leistungsfähigkeit in vielen Fällen zu erhöhen vermag.

Nur *die dauernde Übermüdung* und namentlich eine solche der eine nicht entsprechend lange währende Ruhe und Erholung folgt, ist gesundheitschädigend und zwar in gleichem Masse für den Körper wie für das Nervensystem.

Das "Übertrainieren" im Sport ist daher für die Schuljugend (und auch für die Erwachsenen) ebenso bedenklich wie eine dauernde Überanstrengung des Geistes. Ich stehe aber nicht an, zu erklären, dass bei *gesunden Schülern* eine derartige Überanstrengung des Geistes durch den regelmässigen Unterricht nur in seltenen Fällen besteht so z. B. vor den sogenannten "Reifeprüfungen" (Matura u. dergl.) und bei Schülern die neben dem regelmässigen Schulunterricht noch andere Freigegegenstände (Sprachen, Musik) in extensiver Weise betreiben, ohne dieser aussergewöhnlichen Mehrarbeit körperlich, bezw. geistig gewachsen zu sein. Die Hauptsache, auf die es hier ankommt, ist die *Ermüdbarkeit*. Eine *leichte* Ermüdbarkeit, wo die Ermüdung, bezw. Übermüdung schon bei einer Arbeit eintritt, die ein gesundes, gleichaltriges und in gleicher Weise trainiertes Individuum mühelos überwindet, ist ein pathologisches Sympton und solche Individuen sind es, die der Schonung bedürfen und die bei höheren Graden der Ermüdbarkeit für die entsprechende Arbeit überhaupt nicht geeignet sind.

Eine überaus eingehende Studie über die verschiedensten Arten

der Ermüdung hat *Lagrange* (wenn auch von ganz andern, als schulhygienischen Gesichtspunkten aus) durchgeführt. Eine Wiedergabe der an interessanten Details reichen Schrift findet man in "Le monde Medical 1912 No. 452 u. ff. Ein Eingehen auf die bedeutsame Arbeit würde aber hier zu weit führen; ich will daher nur auf sie hingewiesen haben und kann ihre Lektüre wärmstens empfehlen.

Die vorangehenden Darlegungen sind nicht etwa nur *theoretische* Überlegungen, die am Studiertisch entstanden sind, sie sind die Ergebnisse einer langjährigen Erfahrung, sie sind die Wiedergabe von Tatsachen, welche die Beobachtung einer genügend grossen Anzahl von Schülern ergeben hat, sie sind aus dem Leben gegriffen.

Diese Tatsachen müssen unsere Stellung zu dem Ermüdungsproblem meiner bescheidenen Ansicht, aber auch meiner innigsten Überzeugung nach wesentlich verändern.

Vor allem müssen wir strenge unterscheiden zwischen *gesunden*, d. h. normalen und nicht normalen, bzw. abnormalen Kindern. Diese "Anormalen" müssen nicht etwa immer psychopathisch (in dem landläufigen Sinne) sein; ich betrachte eine leichte Ermüdbarkeit bei einer dem Alter des betreffenden Kindes im allgemeinen angemessenen Arbeit schon als eine Anomalie. Der Massenunterricht kann auf diese, so ungemein häufig vorkommenden "Anomalien" keine Rücksicht nehmen und dies um so weniger, je mehr Schüler in einer Klasse sitzen. - Das leitet uns einerseits zu der Forderung hinüber, die Schüleranzahl in den einzelnen Klassen so niedrig wie möglich zu nehmen (40 oder weniger) anderseits zu der Forderung des Sonderklassensystems, wie es *Sickinger* in Mannheim so geistreich begründet hat, wenn man auch seine Einteilung der einzelnen Gruppen nicht sklavisch nachzuahmen braucht.

Der Staat und die Gemeinden-kurz die Schulerhalter-haben die *Pflicht* allen Kindern eine allgemeine Bildung zuteil werden zu lassen, welche sie befähigt, sich dereinst eine Existenz zu gründen. Das moderne Leben stellt aber für eine derartige Existenzmöglichkeit-namentlich in Städten-ganz ungleich höhere Anforderungen, als die sogenannte "gute alte Zeit;" deshalb muss auch die Schulausbildung eine bei weitem gründlichere sein, als ehemals und deshalb dürfen wir nicht in unseren Ansprüchen an den Unterricht aus lauter Furcht vor "Ermüdung" immer mehr und mehr herabgehen, sondern im Gegenteil, wir müssen *Maximalleistungen* der Schüler anstreben und aus den *gesunden* Kindern herausholen, was aus ihnen herauszuholen ist, wir müssen ihre körperliche und geistige Leistungsfähigkeit durch ein vernünftiges "Training" zur möglichsten Höhe steigern. Damit ist durchaus nicht gesagt, dass die Unterrichtsmethode nicht eine andere sein soll, wie bisher und dass man die Schüler mit Memorierstoff vollstopfen soll-die Frage der Schulreform gehört auf ein anderes Blatt.

Soll die Leistungsfähigkeit der Schüler auf das erreichbare Höchstmass gebracht werden, dann muss aber vor allem eine andere Reform vorangehen: *Die Reform der Heranbildung von geeigneten Lehrkräften*. Ein Lehrer, der seine kleinen Zuhörer durch seinen Vortrag nicht zu fesseln und anzuziehen vermag, "ermüdet" die Schüler auch dann, wenn er sie nicht besonders anstrengt, während ein Pädagoge, der bei seinem Unterricht das Interesse der Schüler wachzuhalten versteht, viel grössere Forderungen an die Aufnahmefähigkeit seiner Klasse stellen kann. Der Schultyrann mit der Rute und der Lehrplan-Pedant müssen dem modernen pädagogischen Psychologen Platz machen.

Das gilt wohl in erster Linie für die Volks- und Bürgerschulen, aber es hat auch seine Giltigkeit für die höheren Lehranstalten (Mittelschulen). Bei den Schülern der höheren Lehranstalten müssen noch weit mehr, als bei den Volks- und Bürgerschulen, Höchstleistungen angestrebt werden, denn hier handelt es sich um eine Heranbildung zu den Gelehrtenberufen, oder sollte sich wenigstens darum handeln. Bei dem grossen Fortschritt aller Wissenschaften sind jetzt die Forderungen, die man an die Urteilskraft und an das Wissen jedes Einzelnen stellen muss, ganz gewaltig gesteigert; die Ausbildung der Gymnasiasten und der Realschüler muss daher eine weit intensivere sein, als früher, man muss von den Schülern mehr verlangen können, wenn auch gerade deshalb jeder unnötige Ballast (über das Quale und Quantum lässt sich streiten und das ist auch eine mehr pädagogische Frage) über Bord geworfen werden muss, um für das Mehrerforderniss Raum zu schaffen. Daraus folgt aber, dass für das eigentliche *Studium* nur die wirklich Tauglichen ausgewählt werden sollen, es muss eine *Auslese* getroffen werden.

Das ist keine ausschliesslich pädagogische, sondern eine schulhygienische und auch *ärztliche* Forderung. Die Mittelschulen sollen lediglich Vorbereitungsstätten für das Hochschulstudium sein und nicht, wie dies gegenwärtig nur allzuhäufig der Fall ist, eine Modesache für all diejenigen Eltern, "die sich das leisten können" oder die die Eitelkeit haben, mit aller Gewalt einen "Studierten" in der Familie zu haben. Wie viele verfehlte Existenzen, aber auch wie viel an Körper und Geist Verkrüppelte fallen dieser Mode zum Opfer. Die Klagen über das geistige Proletariat und über die "geistige Überbürdung" der Mittelschüler würde sicherlich verstummen, wenn man zum Mittelschulstudium nur jene zulassen würde, die geistig nicht so leicht ermüdbar und zu Höchstleistungen befähigt sind.

Das ist durchaus keine Grausamkeit, das ist ein physiologisch und psychologisch vollauf begründetes Vorgehen, eine kulturelle, aber auch eine *hygienische* Forderung.

Das setzt aber auch daneben eine Einheitsschule voraus, welche dem

Schüler nicht nur eine allgemeine Bildung vermittelt, sondern deren Absolvierung auch gewisse Benefizien verschafft, welche jetzt nur den absolvierten Mittelschülern zuteil werden, wie z. B. das Einjährig-Freiwilligen-Recht, und zu einem guten Teil den bedenklichen Zudrang zu den höhern Lehranstalten bedingen.

Für die Minderbefähigten, für die geistigen Schwächlinge, für die Kränklichen und Siechen müssen natürlich Sonderanstalten bestehen.

Wenn man auf diese vorstehend nur in groben Zügen angedeutete Weise eine Auswahl der Schüler nach ihrer körperlichen und geistigen Anlage treffen wird- und eine Voraussetzung hiefür ist die obligatorische staatlich geregelte schulärztliche Aufsicht für *alle* Schulkategorien- dann wird es keine Übermüdung und keine "Überbürdung" geben und jeder wird auf den Platz gestellt sein, den er nach Massgabe seiner körperlichen und geistigen Kräfte auszufüllen vermag. In der richtigen und rechtzeitigen *Berufswahl* liegt der Schlüssel zur Verhütung der "Überbürdung" und "Übermüdung." Weg mit der ewigen Ermüdungsfurcht, vorwärts zur Ertüchtigung unserer Jugend und des Volkes durch ernste und stramme Arbeit und durch Anspannen aller körperlichen und geistigen Kraft- darin liegt das Heil unserer Zukunft!

EINFLUSS DES ANTIKENOTOXIN

Auf Die Geistige Leistungsfähigkeit der Schüler

VON

MARX LOBSIEN

In dem Nachfolgenden soll über Versuche berichtet werden, die ich mit dem *Weichardtschen Antikentoxin* in einer Schulklasse anstellte. Es handelte sich dabei um die Frage, ob möglich sei, durch dieses Antikentoxin die geistige Ermüdung zu beeinflussen.

Prof. Weichardt versetzte Meerschweinchen dadurch in einen schwer soporösen Zustand, dass er sie auf einem Kokosteppeich unausgesetzt rückwärts zog. Die Atmung verlangsamte sich und die Temperatur ging erheblich herab. Durch Anwendung von Periostreizen und leichtes Faradisieren der Gesamtmuskulatur ward endlich völliger Atemstillstand herbeigeführt. Der Muskelpresssaft des verendeten Tieres wurde frischen Tieren injiziert und man erreichte, je nach dem Quantum des injizierten Saftes, alle Stadien der Ermüdung.

Der Presssaft ist aber sehr komplexer Art, und um nun zu entscheiden, ob der reine Saft oder seine *Beimengungen* die Ermüdung veranlasste, unterwarf Weichardt ihn einem sehr schwierigen Reinigungsverfahren: Es zeigte sich, dass der reine Presssaft das eigentliche Ermüdungstoxin ist.

Die Herstellung des Ermüdungstoxins aus Muskelpresssaft ist ein ausserordentlich kompliziertes Verfahren. Es lag nahe, zu versuchen, es auf anderem Wege zu gewinnen. Das gelang Weichardt nach unheimlich mühevollen Versuchen: Bei der Aufspaltung von Eiweissmolekülen infolge chemischer und physikalischer Einwirkung gelang ihm unter gewöhnlicher Temperatur die Herstellung des Toxin und bei Siedehitze die Herstellung des *Antikörpers*. Für dieses künstlich abspaltbare Toxin wählte Weichardt den Namen *Kenotoxin*, für den Antikörper die Bezeichnung *Antikentoxin*.

Schon mittels ganz geringer Mengen des Antitoxin kann man das Kenotoxin beeinflussen.

Die Inkorporierung des Antikentoxin kann auf verschiedene Weise geschehen, durch Injection, per os und durch die Schleimhäute der Atmungswege. In letzterem Falle wird die das Antikentoxin enthaltende Flüssigkeit (das Antikentoxin wird hergestellt durch: Kalle & Co., Aktiengesellschaft, Biebrich a / Rhein) in die Luft zerstäubt und eingeatmet.

Experimente und Ergebnisse: Die Wirkung des Antikentoxin musste auf Grund sorgsamer Untersuchungen genauer erforscht werden. An

die Experimente müssen folgende versuchstechnische Anforderungen gestellt werden, die unbedingt erfüllt sein müssen, bevor zuverlässige Resultate erzielt werden können. 1. Sie müssen an einer genügend grossen Anzahl von Versuchspersonen ausgeführt werden; 2. Es muss dafür Sorge getragen werden, dass das Antikentoxin nur zur Anwendung gelangt bei der Prüfung von Leistungen, die durch grösstmögliche Übung auf einen solchen Höhepunkt gehoben worden sind, dass die Ermüdung deutlich wirksam werden kann. 3. Die Versuchspersonen dürfen um die Anwendung und die Wirkungsweise des Antikentoxin nicht wissen, weil sich sonst Suggestivwirkungen einstellen, die das Resultat fälschen. 4. Billigerweise muss man verlangen, dass Antikentoxinsversuche erst dann an Schülern angestellt werden, wenn ihre völlige Unschädlichkeit für die Gesundheit nachgewiesen worden ist.

1. Weichardt untersuchte den Einfluss seines Antikentoxin auf die Muskelleistung mittels der *Fusshantelmethode*, die einen möglichst grossen Teil des Körpers ermüden soll. Die Versuchsperson nimmt in jede Hand 2–5 kg schwere Hantel, dreht sie bei horizontal vorgestreckten Armen nach den Schlägen des Metronoms um ein Viertel des Kreisbogens nach aussen und dann wieder nach innen und hebt dabei im Takte abwechselnd den rechten und den linken Fuss bis zur Kniehöhe. Wenn nun trainierten Personen am Tage vorher kleine Mengen des Antikentoxin in die Subkutis einverleibt worden war, dann ergab sich eine über die alltägliche *weit gesteigerte Leistungshöhe*, die sich noch während der nächsten 20–24 Stunden bemerkbar machte. Der Vorgang im Körper dürfte folgender sein: „Kleine Mengen des inkorporierten Antikentoxin unterstützen den Körper in seiner Fähigkeit, die bei der Hantelfussübung sich bildenden Ermüdungsstoffe abzusättigen, sodass volle Ermüdung erst später als bei der Standardleistung eintritt.“

2. Lorentz-Berlin² konnte die Resultate Weichards bestätigen und stellte ebenfalls fest, dass die Anwendung des Antikentoxin *keinerlei schädliche Nebenwirkungen im Gefolge habe*, vielmehr hob sich die Frische und das körperliche Allgemeinbefinden.

3. Zur Prüfung des Einflusses von Antikentoxin auf die geistige Leistungsfähigkeit empfahl Weichardt, zu verschiedenen Zeiten des Unterrichts, Aufgaben schriftlich lösen zu lassen. Lorentz führte diesen Gedanken zuerst weiter aus. Er liess eine Anzahl von Schülern früh und nach fünfständigem Unterricht Rechenaufgaben lösen. Um Maximalleistungen zu erzielen, teilte er den Prüflingen mit, die Arbeiten sollten der Platzversetzung dienen. Als Massstab für die Wertung der Arbeiten diente die Schnelligkeit der Lösung, die Zahl der Fehler und die Menge der Korrekturen. Unter normalen Umständen waren die

Leistungen nach fünfstündigem Unterricht herabgegangen; wurde aber nach dem Frührechnen eine einprozentige Antikenotoxin Lösung zerstäubt (unter dem Vorwande, es solle die Luft in der Klasse verbessert werden) dann ergab sich folgendes: *Die Rechengeschwindigkeit war gestiegen, die Zahl der Fehler und Korrekturen hatte abgenommen* und einzelne Schüler, die sonst am Ende des Unterrichts abgespannt waren, erzielten höhere Leistungen als am Morgen.

4. Die Untersuchungen von Lorentz schienen mir an dem Mangel zu leiden, dass die Übung nicht in solchem Umfange berücksichtigt worden war, dass die Leistungsfähigkeit im Rechnen genügende Höhe erreicht hatte. Diesem Übelstande wollte ich durch meine Untersuchungen vom vorigen Jahre abhelfen und zugleich den beiden Hauptkomponenten der Arbeitskurse, der Übung und Ermüdung unter Antikenotoxinwirkung nachgehen. Die Hauptaufgabe war wieder, zu erkunden, ob mittels des Kenotoxin die Ermüdung gemildert oder aufgehoben werden könnte. Zugleich sollte geprüft werden, ob irgendwie nachteilige Folgen für das Wohlbefinden mit der Anwendung des Antikenotoxin verbunden seien. Ich benutzte zur Prüfung das *fortlaufende Addieren einstelliger Zahlen*. Nach vorausgegangener Trainierung erledigte ich in 22 Sitzungen 66961 Additionen. Die Fünfminutenleistungen wurden auf ein Signal hin durch einen Strich markiert. Ich war selbst Versuchsperson. Die Antikenotoxinversprühungen wurden durch einen Assistenten vorgenommen. Sie geschahen, bevor ich das Versuchszimmer betrat und natürlich ohne mein Wissen. Ich war also völlig unorientiert darüber, ob ein Normal- oder Kontroll- (Antikenotoxin) Versuch stattfand. Das Resultat war folgendes: Bei den Versuchen, die sich nur über *eine* Stunde ausdehnten, zeigte sich bei den Antikenotoxinversuchen eine *ganz geringe Leistungsabnahme* von 1000 : 994, bei den Normalversuchen eine grössere, von 100° : 953. Die Differenz war also nicht sonderlich gross. Das ist aber nicht verwunderlich, weil die Wirkung des Antikenotoxin *erst später* in deutliche Erscheinung tritt. Bei einer dreistündigen Rechenperiode konnten folgende absolute Stundenleistungen festgestellt werden.

Antikenotoxin 670 : 662 : 644

Normalversuch 653 : 570 : 510

Der Einfluss des Antikenotoxin auf die Übung konnte dahin bestimmt werden, dass die Übungswirkung viel schneller zum Ziele (Erreichung der Maximalleistung) gelangte als unter gewöhnlichen Bedingungen. Irgend eine Benachteiligung des körperlichen Befindens war nicht aufweisbar.

5. Auf Grund dieser Vorstudien konnte ich an die Aufgabe herantreten, durch umfängliche Prüfungen in einer Schulklasse die Wirkungen des Antikenotoxin festzustellen.

Versuchspersonen waren rund 50 Knaben im durchschnittlichen Alter von 9 Jahren. Die Methode war eine *Rechenmethode*. Weil aber fortlaufendes Addieren aus inneren und äusseren Gründen auf grosse Schwierigkeiten stiess, liess ich nur zu Beginn und am Schluss des Unterrichts (trotz mancherlei Bedenken, die ich mir keineswegs verhehlte) *während eines Zeitraums von 5 Minuten rechnen*. Ich verteilte unter die Prüflinge Blätter, die mit senkrechten Reihen von Ziffern bedruckt waren. Jede vierte Ziffer war durch einen kurzen Strich markiert. Die Versuchspersonen mussten immer vier Ziffern addieren und das Resultat neben die letzte schreiben. Das Rechnen musste so schnell wie möglich geschehen. Die Zerstäubung fand nach dem Morgenrechnen statt, unter dem Vorwande, dass die Luft verbessert werden sollte, dann nahm der Unterricht seinen gewohnten Fortgang.

An 22 Versuchstagen wurden insgesamt 32199 Aufgaben gerechnet. Die Normaltage ergaben am Schluss des Unterrichts insgesamt 72648 Lösungen, die Antikenotoxintage 87847 so dass sich zu Gunsten der letzteren eine Mehrleistung von etwa 20% ergab. Nachstehende Übersicht gibt ein Gesamtbild der Resultate in absoluten Werten:

ERGEBNIS

VERSUCHSTAG	ABSOLUTE WERTE		
	MORGENS	MITTAGS	
		OHNE A.	MIT A.
1	5415	4653	
2	5051	4961	
3	6076		5970
4	5457	5291	
5	5675		6094
6	6077	6087	
7	5852		6762
8	6589	5619	
9	6622		8916
10	7530	6517	
11	6700		7655
12	7568		8130
13	7867	7351	
14	7702		8439
15	9361	7614	
16	8212		8702

ERGEBNIS

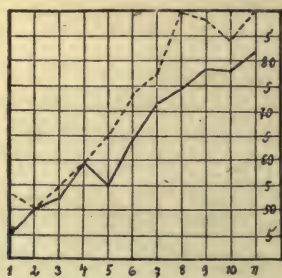
VERSUCHSTAG	ABSOLUTE WERTE		
	MORGENS	OHNE A.	MIT A.
17	9245	8118	
18	8687	7954	
19	8293		8649
20	9455	8483	
21	9073		8955
22	8997		9575
Summe	161504	72648	87847

Gesamt: 321999.

Differenz: mit Antikenotoxin	87847
ohne "	72648
	<u>15199</u>

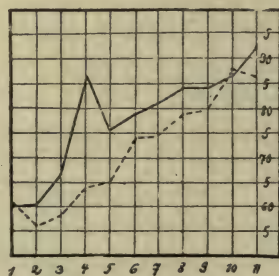
Die Zahlenreihen werden in folgenden beiden Kurventafeln veranschaulicht: die eine veranschaulicht diejenigen Versuchstage, die unter Antikenotoxinwirkung standen, die andere die Kontrollversuche. Die Werte sind in ganzen Hunderten der Tabelle entnommen worden mit den üblichen Erhöhungen.

Fig. 1



Ohne Antikenotoxin.

Fig. 2



Mit Antikenotoxin.

Die gestrichelte Linie deutet die Leistungen am Morgen an, die ausgezogene Kurve die Leistungen nach dreistündigem Unterricht.

Dazu folgende Erläuterung! In Fig. 1 sieht man, wie bis zu dem mit 4 bezeichneten Normaltage (6. Versuchstag) die Kurven ungefähr zusammenlaufen, während die Mittagskurve nur ganz wenig unter derjenigen des Morgens liegt. Das erklärt sich aus *Übungswirkungen*. Der vorausgegangene Übungskursus war nicht weit genug ausgedehnt worden, um die Störung zu überdecken. Der Beweis dafür liegt in dem Umstande, dass zwar infolge von Übungswirkungen die Gesamtlei-

stungen während aller 22 Versuchstage im grossen und ganzen anstiegen, hier aber, an den ersten Tagen, war diese Wirkung so gross, dass sogar die Ermüdungswirkungen durch den Unterricht nicht zur Ausprägung gelangten. Erst vom nächsten Versuchstage an ist das möglich. Bei der Antikenotoxinkurve liegen die mittäglichen Leistungen nicht nur jeweils in gleicher Höhe mit denen des Morgens, sondern übersteigen sie noch erheblich. (Das Gegenteilige Ergebniss vom ersten und letzten Versuchstage erklärt sich aus versuchstechnischen Umständen; am ersten Tage erfolgte die Zerstäubung erst 20 Minuten vor der Rechenprobe, daher konnte das Antikenotoxin noch nicht zur vollen Wirkung kommen. Die Annäherung der Kurve gegen den Schluss wird man sich zu deuten haben als veranlasst durch die naturgemässe Verminderung der Übungszunahme.)

Fassen wir nun die *prozentualen* Ergebnisswerte ins Auge! Wertet man die Morgenleistungen mit 100, dann findet man folgende Tabellenwerte:

ERGEBNIS IN %.	
ohne Antikenotoxin	mit Antikenotoxin
100	
— 14	— 2
— 2	7
— 3	16
0	35
— 15	14
— 13	7
— 7	10
— 9	6
— 12	6
— 8	— 1
— 10	6
Durchschnitt — 8,5	+ 9,1

Wenn man die Prozentualwerte erst von dem Tage an berechnet, da die störenden Nebenwirkungen ausgeglichen sind, dann ergibt sich *unter Antikenotoxinwirkung eine Hebung um reichlich 11% und an den Normaltagen eine Senkung von etwa 11%, also eine durchschnittliche günstige Wirkung von rund 20%.*

Unseren bisherigen Betrachtungen lagen Kollektivzahlen zu Grunde: *Wie aber verhalten sich die Individuen im besonderen?* Zeigen sich alle Individuen in gleichem Sinne durch Antikenotoxin beeinflussbar? Ist die Antikenotoxinwirkung auf dasselbe Individuum konstant? Schon ein oberflächlicher Blick in meine Untersuchungsprotokolle zeigt teils erhebliche Schwankungen im individuellen Verhalten, es fragt sich

aber, ob diese Schwankungen so bedeutend sind, dass sie den Nachweis erbringen, das Antikenotoxin wirke nicht unter allen Umständen und nicht bei allen Personen. Die Beantwortung dieser Fragen würden eine Veröffentlichung der gesamten Untersuchungsprotokolle notwendig machen- das ist aus naheliegenden Gründen nicht möglich. Ich beschränke mich darum auf folgende beiden Angaben: 1. Trotz der vielen Schwankungen im einzelnen war *die weitaus grösste Mehrzahl der Versuchspersonen durch das Antikenotoxin beeinflussbar*. 2. Bei gewissen Individuen konnte aber eine Wirkung garnicht oder doch nur in ganz geringem Umfange nachgewiesen werden. Worin die *Ursache* für dieses Verhalten zu suchen sei, lässt sich auf Grund meines Material nicht entscheiden; allein die *Tatsache* darf konstatiert werden.

Nur auf einen Punkt möchte ich abschliessend den Finger legen, der geeignet erscheint, in das individuelle Verhalten einiges Licht zu senden: Das Verhältniss der *individuellen Ermüdbarkeit* zur Antikenotoxinwirkung. Obwohl die Anforderungen, die der Versuch und die Schularbeit an die Prüflinge stellte, objektiv betrachtet, von gleicher Grösse waren, zeigten doch die mittäglichen Leistungen gegenüber denen des Morgens wesentliche individuelle Schwankungen. Diese Unterschiede sind zum grossen Teile bedingt durch die Differenzen in der individuellen Ermüdbarkeit. Für meine Schülergruppe (aus der drei Versuchspersonen ausgeschaltet werden müssen) berechnete ich folgende Prozentualwerte, in denen die Mittagsleistungen zu den mit 100 bewerteten Anfangsleistungen des Tages in Beziehung gesetzt sind:

3 mal 96%	2 mal 84%	3 mal 76%
1 " 95 "	2 " 83 "	1 " 75 "
1 " 94 "	3 " 82 "	1 " 74 "
3 " 91 "	3 " 81 "	3 " 72 "
2 " 89 "	1 " 80 "	1 " 71 "
4 " 88 "	4 " 79 "	1 " 66 "
4 " 87 "	1 " 78 "	
2 " 85 "	1 " 77 "	
		47 Vers.-Personen.

Es drängt sich nun die Frage auf, ob die Wirkungen des Antikenotoxin zu der verschiedenen Ermüdbarkeit in einem bestimmten Verhältnis stehe, etwa so, dass diejenigen Prüflinge, die am meisten ermüden durch das Antikenotoxin am nachhaltigsten beeinflusst werden. Die folgende Übersicht zeigt, dass die Wirkung in diesem Sinne nicht *eindeutig* ist:

1 mal - 4	3 mal +18	2 mal +31
1 " + 6	1 " +19	1 " +32
1 " + 7	1 " +20	2 " +33
1 " +10	2 " +21	2 " +36
1 " +11	6 " +22	1 " +38

1 mal +12
1 " +14
1 " +15
2 " +16
2 " +17

1 mal +23
1 " +26
3 " +28
1 " +29
1 " +30

1 mal +39
1 " +40
2 " +42
1 " +45
1 " +46
1 " +49

47 Vers.-Personen.

Die Zahlen sind die Differenzen zwischen den prozentualen Ermüdungsleistungen und den Antikenotoxinleistungen jeder einzelnen Versuchsperson. Wir finden erhebliche Differenzen. Trotzdem lässt sich die Frage, ob eine Korrelation besteht zwischen Ermüdbarkeit und Antikenotoxinwirkung im allgemeinen entscheiden, wenn man nicht die einzelnen Versuchspersonen, sondern die hier geprüften *Gruppen* wertet. Mit Hülfe der bekannten Formel:

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \quad \text{und w. F.} - 0,6745 \frac{1-r^2}{n(1+r^2)}$$

berechnet man $r = 0,57$ und w. F. $- 0,06$. Man darf also behaupten, dass zwischen Ermüdbarkeit und Antikenotoxinwirkung positive *Korrelation* besteht und die Differenzen in der Antikenotoxinwirkung müssen sich zum Teil aus den Differenzen in der Ermüdbarkeit erklären.

Literatur.

1. Weichardt: Über Ermüdungsstoffe Stuttgart 1910.
2. Lorentz: Über Resultate der modernen Ermüdungsforschung und ihre Anwendung in der Schulhygiene Hamburg 1911.
3. Lobsien: Über den Einfluss des Antikenotoxin auf die Hauptkomponenten der Arbeitskurve. Langensalza 1912.
4. Konrich: Zur Frage der Ermüdungsmessung und der Wirksamkeit des Weichardtschen Antikenotoxin? Ztschr. f. Schulgesundheitspflege. Hamburg 1912-8.

Konrich kommt durch seine Untersuchungen zu dem Resultat: Die Gesamtheit der Ergebnisse zeigt keine Wirkung des Antikenotoxin; im einzelnen zeigen viele Prüflinge nach der Darreichung eine Mehrleistung, ebenso viele keine Wirkung. Ich bin auf seine Untersuchungen nicht näher eingegangen, weil sich aus der Veröffentlichung kein klares Bild der methodischen Massnahmen gewinnen lässt und mit der Möglichkeit gerechnet werden muss, dass hier *Mängel* vorliegen.

5. Lobsien: Über den Einfluss des Antikenotoxin auf die geistige Leistungsfähigkeit. Päd. Forschung. Leipzig 1913.

NEUERE CHEMISCHE FORSCHUNGEN IN IHRER BEZIEHUNG ZUR SCHULHYGIENE

VON

WOLFGANG WEICHARDT

Der Physiolog Ranke war der erste, welcher die Existenz von *Ermüdungsstoffen* wahrscheinlich gemacht hat. Durchspülte er die Muskeln ermüdeter Tiere mit physiologischer Kochsalzlösung so reagierten sie von neuem auf Reize. Später wies Mosso nach, dass Blut ermüdeter Hunde Versuchstiere ermüdet. Die Ermüdungsstoffe selbst zu charakterisieren gelang aber bis vor kurzem nicht, weil diese chemisch noch nicht fassbaren Substanzen nur mit Hilfe feinerer Methoden nachweisbar werden, die erst im Laufe der letzten Jahrzehnte ausgebildet und vertieft wurden.

Die neuere Ermüdungsforschung beginnt im Jahre 1903. Ich habe damals zuerst die auf dem Gebiete der Immunitäts-wissenschaft gewonnenen Erfahrungen für diese Untersuchungen verwertet. Ermüdungsstoffe von gleicher, wohl charakterisierter Wirksamkeit wurden in grösseren Mengen dargestellt, ferner durch antikörperartig wirkende Substanzen entgiftet und dadurch charakterisiert. (Literatur s. Weichardt, Über Ermüdungsstoffe. Stuttgart, Ferd. Enke 2. Aufl. 1912.)

Diese Errungenschaften der letzten Jahre mögen in Kürze übersichtlich skizziert werden: Ermüdet man kleine Tiere, z. B. Meerschweinchen, hochgradig, so tritt erst leichte Erhöhung der Körpertemperatur ein, später beträchtlicher Niedergang. Die Atmung verlangsamt sich, und die Tiere werden soporös, gerade so als wären sie mit Äther oder Chloroform betäubt. Werden dann die Muskeln der getöteten Tiere ausgepresst, so vermag man mit diesem, vorher noch von Salzen, Harnstoff, Kreatin u. s. f. befreiten Presssaft bei damit injizierten Versuchstieren alle Stadien der Ermüdung, bis zum Ermüdungstode hervorzurufen.

Diese Wirkung ist hauptsächlich Eiweisspaltprodukten zuzuschreiben; denn bei Behandlung von Eiweiss mit Chemikalien, z. B. mit Natronlauge, bilden sich ganz gleich ermüdend wirkende Substanzen, die ebenfalls entgiftet werden können und zwar sowohl mit dem betreffenden durch Injektion gewonnenen Antiserum, als auch durch die sogenannten Retardine (Hemmungskörper). Letzteres sind zum Teil bereits chemisch definierte Substanzen, z. B. das Succinimid, oder auch aus Eiweiss durch Hydrolysieren bei Siedehitze erzeugte wirksame Gemische z. B. das Antikenotoxin. Dieses Präparat, welches

von der chemischen Fabrik Kalle in Biebrich a / Rh. dargestellt wird, ist am wirksamsten, wenn es durch Injektion direkt in die Körpersäfte der Versuchstiere oder der Versuchspersonen gelangt. Es wird dann der Körper in seinem Bestreben, die sich bildenden Ermüdungsstoffe (Kenotoxin) zu entgiften, erheblich unterstützt, sodass die Leistungsfähigkeit des betreffenden Individuums für 24–36 Stunden wesentlich anwächst. Es lässt sich das an Tieren mittels Kymographionversuchen durchaus einwandfrei nachweisen. Schwieriger gelingt der Nachweis am Menschen. Nur sorgfältig Trainierte sollten sich derartigen Versuchen unterziehen. Die üblichste Methode der Ermüdungsmessung ist bekanntlich die nach Mosso, mit Hilfe des Ergographen. Einfacher, daher besonders auch für die Schulpraxis recht zweckmässig, ist die Weichardst'sche *Hantelfussübung*:

Die Versuchsperson nimmt in jede Hand eine 2–5 kg. schwere Hantel und dreht sie bei horizontal vorwärts gestreckten Armen nach dem Pendelschlage einer Sekundenuhr oder des Metronoms um ein Viertel des Kreisbogens nach aussen und dann wieder nach innen. Zugleich hebt sie, ebenfalls im Sekudentakte, abwechselnd den rechten und dann wieder den linken Fuss bis zur Kniehöhe. Schon nach 20 bis 30 Sekunden wird die anfangs spielend leichte Übung schwieriger, und plötzlich sinken die Arme infolge hochgradigster Ermüdung. Dieser Zeitpunkt, welcher durch Zählen der Sekunden genau festgestellt werden kann, gibt nach meiner Erfahrung die Stärke des vor der Übung bereits vorhandenen Ermüdungsgrades ebenso sicher an, wie die Ergographenkurve. Überdies hat diese Hantelfussübung den Vorteil, dass in einer recht grossen Anzahl von Muskeln Toxin gebildet wird, also ungleich mehr als bei Ergographenversuchen, wo ja nur eine Gruppe der Vorderarmmuskulatur in Tätigkeit tritt.

Diese Hantelfussübung hat allerdings, genau wie die Ergographenmethode, nur Wert, wenn der Ausübende vorher sehr sorgfältig trainiert ist, und wenn sekundäre Störungen, namentlich Beeinflussungen suggestiver Natur, vollständig ausgeschlossen werden.

Aus einer grösseren Reihe von Versuchen, die unter diesen Kautelen an gut trainierten Versuchspersonen ausgeführt wurden, ging etwa folgendes hervor:

Nach der einmaligen, bis zur vollkommenen Ermüdung fortgesetzten Hantelfussübung ist das Ergebnis der nach 20 bis 30 Minuten wiederholten gleichen Übung eine etwas grössere Leistung, und zwar meines Erachtens, weil durch die erste Anstrengung etwas Kenotoxin im Körper entstanden ist, welches nach kurzer Zeit geringe Mehrleistung veranlasst. Weitere Wiederholungen der Hantelfussübungen ergeben dann deutliche Herabminderung der Leistungsfähigkeit, zeigen also mehr und mehr überhandnehmende natürliche Ermüdung an. Sind dagegen

der trainierten Versuchsperson am Tage vorher kleine Mengen des Antikörpers in die subcutis einverleibt, so ergibt sich eine über die alltägliche wesentlich gesteigerte Leistungsgrösse. Dieselbe macht sich auch während der nächsten 20 bis 30 Stunden noch geltend und verschwindet erst dann allmählich. Es dürfte der dabei im Körper sich vollziehende Vorgang folgender sein: Kleine Mengen des inkorporierten Antikörpers unterstützen den Organismus in seiner Fähigkeit, die bei der Hantelfussübung sich bildenden Ermüdungsstoffe (Kenotoxin) zu entgiften., sodass volle Ermüdung erst später als bei der Standardleistung eintritt.

Eine weitere für unsere Zwecke brauchbare Methode der Ermüdungsmessung besteht darin, dass Schüler zu Anfang und zu Ende des Unterrichts schriftliche Aufgaben lösen.

Die Schnelligkeit und Sicherheit dieser Lösungen lassen erfahrungsgemäss gewisse Schlüsse auf den Ermüdungszustand der Schüler zu, namentlich dann, wenn die Versuche mit grosser Vorsicht angestellt und unter peinlichen Kautelen von erfahrenen Schulhygienikern überwacht werden. Nach dieser Methode ging unter anderem der Berliner Schulhygieniker Fr. Lorentz vor: Er liess eine bestimmte Zahl von Schülern, angeblich zum Zweck der Platzversetzung, damit Maximalleistungen gewährleistet werden, nach 4-5 stündigem Unterricht Rechenaufgaben lösen und berechnete resp. verglich die Schnelligkeit bei der Lösung gleicher Aufgaben, die Fehlerzahl und die von den Schülern gemachten Korrekturen mit den Leistungen zu Anfang des Unterrichts.

Während sich nun feststellen liess, dass die Leistungen der Schüler nach 4-5 stündigem Unterricht, sowohl was Schnelligkeit, als auch die Qualität anlangt, wesentlich herabgemindert ausfallen, findet z. B. am 30. Juni 1909 Lorentz, der nach dem Frührechnen in der Klasse mittels eines Handsprays, angeblich um die Luft zu bessern, Antikeno-toxinlösung (1 proz.) im Klassenzimmer reichlich verstäubt hatte, die Leistungen trotz des vorhergehenden 4-5 stündigen Unterrichts als erheblich gebessert; denn

- 1) die Geschwindigkeit im Rechnen war gestiegen, und zwar um 50 Proz.;
- 2) die Fehlerzahl und die der Korrekturen hatte nach dem 5 stündigen Unterricht doch noch abgenommen.
- 3) Einzelne Schüler, die sonst am Ende des Unterrichts schlaff

*) Sikorski, Burgerstein, Höpfner und Laser bedienten sich dieser Methode. Allzusehr auf Einzelheiten des grossen Spezialgebietes hier einzugehen, würde jedoch zu weit führen. Kräpelin hat in einer Monographie (Leipzig, Fischer, 1894) diesen Gegenstand vom Standpunkte des Psychiaters aus eingehend behandelt.

und müde wurden, hatten bei dem zweiten Rechnen, also nach 5 stündigem Unterricht, einen höheren Platz erzielt, als am Morgen.

Später hat Lorentz diese Versuche sehr oft mit gleichem Erfolge wiederholt. Seine Erfahrung legte er nieder in einer Arbeit in No. 1 der Zeitschrift für Schulgesundheitspflege (Hamburg, Leop. Voss, 1911), welche als Monographie bei demselben Verlage gesondert erschienen ist.

Zu ähnlichen Resultaten kam auch Marx Lobsien in Kiel, der an sich selbst derartige genaue Untersuchungen angestellt hat. Er berichtet darüber in einer Monographie, die 1912 bei Herm. Beyer Söhne in Langensalza erschienen ist.

Ganz besonders beachtenswert ist ferner eine im Archiv für Pädagogik 1913 erschienene Arbeit dieses vorzüglichen Schulhygienikers.

Lobsien hat an 22 Versuchstagen 321 999 Aufgaben rechnen lassen, an je 11 Tagen ohne und mit Antikenotoxinverspray zu Anfang des Unterrichts. Dabei stellte sich bei den Versuchen (ohne Spray) heraus, dass 72 648 Aufgaben gerechnet worden waren, bei den Versuchen mit Antikenotoxinwirkung, die sonst unter ganz gleichen Bedingungen in ganz derselben Zeit erledigt wurden, aber 87 847, somit 20% mehr!

Doch soll auch eine angeblich gegenteilige Beobachtung hier nicht unerwähnt bleiben. So hat Konrich (Flügge'sches Institut) in der IV. Versammlung der Vereinigung der Schulärzte am 30. Mai 1912 darzutun versucht, dass er bei seinen Nachprüfungen der Lorentz'schen Versuche zu Ergebnissen gekommen sei, aus denen auf Leistungserhöhung durch Antikenotoxinwirkung nicht geschlossen werden könne.

Er führt als Hauptbeweis an, dass er bei Versprühen von physiologischer Kochsalzlösung ein erhebliches Anwachsen der Leistungen sah: früh rechneten seine Schüler 51 923 Aufgaben, dabei kamen 8358 Fehler und 672 Verbesserungen vor, nach 4-5 stündigem Unterricht wurden dagegen in der gleichen Zeit 63 353 Aufgaben gerechnet mit 9776 Fehlern und 817 Verbesserungen, d. i. eine *Steigerung* der Leistung um +0,74 und -0,18%. Dem gegenüber macht Lorentz m. E. mit Recht darauf aufmerksam, dass diese Berechnung, unbedingt beanstandet werden müsse, weil, ein derartiges Ergebnis nämlich *Zuwachs* der Leistung nach 4-5 stündigem Unterricht bei einer grossen Schüleranzahl unter sachverständiger sorgfältiger Kontrolle überhaupt noch niemals beobachtet worden sei, ausser von Herrn Konrich, ein derartiger Leistungszuwachs auch *aller sonstigen Erfahrung* und *theroetischen Voraussetzung* widerspreche.

Bleiben aber die von Lorentz durchaus zu Recht beanstandeten Zahlen unbeachtet (Kochsalzspray und der entsprechenden Gegenversuche) so sind auch die von Konrich mit und ohne Antikenotoxinspray *zuerst* errechneten grossen Zahlen der Versuchsergebnisse durchaus

geeignet, die *Leistungsergebnisse des Antikenotoxins* beim Schulunterricht *ins günstigste Licht zu rücken*; denn es rechneten die Konrich'schen Schüler ohne Spray früh

	49,845	Exempel mit 6077 Fehlern u.821 Verbesserungen, nach 4-5
Stunden	55,101	" " 8677 " u.980 "
	Dagegen mit Antikenotoxinspray früh	
	53,355	Exempel mit 7421 Fehlern u.831 Verbesserungen, nach 4-5
Stunden	55,972	" " 8564 " u.914 "
	Noch übersichtlicher gestalten sich diese Verhältnisse bei prozentualer Berechnung:	
	Die Fehlerzahl der Konrich'schen Schüler betrug ohn Spray früh	
	12,19%	die Zahl der Verbesserungen 1,65%
nach 4-5 st. Unterricht	15,71	" " " " 1,74
	Die entsprechenden mit Antikenotoxinspray aber früh	
	13,90%	Die Zahl der Verbesserungen 1,55%
nach 4-5 st. Unterricht	15,31 %	" " " " 1,63%
		Steigerung + 3,52% u. 0,09%
		Steigerung nur + 1,41% u. 0,08%

Daher erhebliche *Leistungserhöhung*.

Es soll nicht unerwähnt bleiben, dass Antikenotoxin (die Retardine überhaupt), da sie leicht dialysabel sind, nicht nur die Schleimhäute des Respirationstraktus und des Magendarmkanals durchdringen, sondern auch zur Resorption kommen, wenn sie in die Haut unter Massage eingerieben werden. So gelang es sehr leicht, bei gut Trainierten Ermüdeten durch Massagereiben kleiner Antitoxinmengen die Zahl der Hantelfussleistung um mehr als die Hälfte zu erhöhen. Doch fehlen nach dieser Richtung hin noch grössere Versuchsreihen.

Dagegen ist es bereits sicher gelungen darzulegen, dass Antikenotoxin, das als Teilgift (Eiweisspaltprodukt) bei manchen Bazillen nachzuweisende Kenotoxin zu entgiften und hiermit die Absonderungen dieser Mikroorganismen zu beeinflussen vermag.

So hat z. B. Fluhrer einen Schutzversuch angestellt und gezeigt, dass Ziegen, denen Tuberkelbazillen in gleicher Menge am Euter injiziert worden waren nur einen lokalen tuberkulösen Prozess am Euter behielten, wenn ihnen in den darauffolgenden Wochen reichlich Retardin einverleibt wurde. Die nicht mit Retardin behandelten Kontrolltiere zeigten dagegen nach derselben Zeit hochgradige Ausbreitung des tuberkulösen Prozesses in allen Organen des Körpers.

Die Erklärung hierfür gab ich später, indem ich zeigte, dass sich aus den Tuberkelbazillen im Serum Gifte bilden, die zum Teil mit Retardin im Reagenzglas entgiftet werden können.

Neurdings hat ein japanischer Arzt, Dr. Takeoka, an einer grossen Anzahl von Meerschweinchen Schutzversuche ausgeführt und gezeigt, dass tatsächlich der tuberkulöse Prozess Kontrollen gegenüber gehemmt werden kann, wenn man den Tieren öfter Retardin injiziert.

In allerletzter Zeit wurden aber die Versuche von Weichardt, Rosenau u. a., die eiweissartige Substanzen in der Ausatemluft nachwiesen, durch eine neue Reaktion im Reagenzglase illustriert: Ich konnte mit meinen Mitarbeitern zeigen, dass durch verbrauchte Luft Katalysatoren gelähmt werden, das sind Substanzen, durch deren Gegenwart die chemischen Prozesse ausserordentlich beschleunigt werden. Wir wissen nun, dass der Körper vielfach mit solchen Katalysatoren arbeitet. So vermag z. B. der rote Blutfarbstoff Sauerstoff energisch zu übertragen. Finden sich also Stoffe in verbrauchter Schulluft, die solche Katalysatoren lähmen, so dürfen sie nicht übersehen werden, und man darf sich mit den bisher auf diesem Gebiete Bekannten durchaus nicht begnügen.

Es ist zu hoffen, dass sich immer mehr Forscher diesen nicht nur theoretisch, sondern auch praktisch eminent wichtigen Fragen zuwenden und diese Richtung weiter ausbauen helfen.

Ferner ist zu hoffen, dass dieser ausserordentlich wichtigen Forschung in Zukunft mehr Mittel zur Verfügung gestellt werden wie bisher, damit sie rascher und intensiver gefördert werden kann.

Schlussätze.

1. Die neuere Ermüdungsforschung beginnt mit dem Jahre 1903. Weichardt führte die bei Immunitätsvorgängen gesammelten Erfahrungen und Methodik in diese Forschung ein.

2. Es gelang sowohl die eigentlichen Ermüdungsstoffe näher zu umgrenzen, als vor allem chemisch gut zu charakterisierende antikörperartig wirkende Substanzen aufzufinden, welche die Ermüdungsstoffe entgiften.

3. Auch Teilgifte von Bakterien, z. B. von Tuberkelbazillen, werden durch diese Antikörperpräparate entgiftet.

4. Dass diese Entgiftung auch im Tierkörper statt hat, konnte durch Ermüdungsmassmethoden an gut trainierten Individuen festgestellt werden.

5. An einem grösseren Schülermaterial konnte von Lorentz und Lobsien mit der Kräpelin'schen Methodik einwandsfrei gezeigt werden, dass die auf Grund der Erkenntnis der neueren Ermüdungsforschung hergestellten chemischen Präparate *ermüdungshemmend* wirken.

6. Durch neue Untersuchungsergebnisse der Weichardt'schen Schule wird das Auftreten lähmender Substanzen in verbrauchter Luft an der quantitativ verfolgbaren Katalysatorenbeeinflussung unzweifelhaft sichergestellt.

7. In Amerika liegen Befunde von Rosenau und seinen Mitarbeitern vor, die in dem gleichen Sinne zu deuten sind.

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Abstracts.

1. The modern investigation of fatigue begins with the year 1903. Weichardt introduced his experiences, collected in immunity procedures, into this branch.

2. He succeeded in determining both the fatigue bodies and in discovering above all those substances possessing antibody qualities, which may well be characterized chemically and neutralizes the poison in the fatigue bodies.

3. Partial poisons of bacteria, e. g. of tuberculosis bacilli, are neutralized by these antibody preparations.

4. That this neutralization of the poison takes place in animal bodies was demonstrated by methods of measuring fatigue in well-trained individuals.

5. Experiments made by Lorentz and Lobsien with the Kräpelin method showed conclusively that the chemical preparations compounded as a result of the facts established by the modern investigation of fatigue, have a restricting effect on fatigue.

6. The latest results of the investigations carried out by Weichardt's school demonstrate beyond doubt, that the presence of paralyzing substances in used-up air influences katalysators in a quantitatively perceptible manner.

7. The results of Rosenau and his collaborators in America can be interpreted in the same sense.

DIE BIOLOGISCHEN GRUNDLAGEN DER SCHÜLERERMÜDUNG

A.

Über Leistungsbeeinflussungen mittels Antikenotoxin

VON

FRIEDRICH LORENTZ

Die natürliche Folge einer jeden vorangegangenen körperlichen oder geistigen Anstrengung ist die *Ermüdung*. *Übermüdung* oder Erschöpfung ist die Folge vorangegangener Ueberanstrengung. Weil die Ermüdung physiologisch ist, gibt es von ihr auch stets eine Rückkehr zur Ruhe, während die pathologische Übermüdung selbst wieder eine *dauernde unfreiwillige* Ruhe darstellt. Diese Gesetze der Arbeit hat Altschul in einem Schema klargelegt: Von dem Ruhepunkt erhebt sich die Kurve über die Tätigkeit zum Maximum der Leistungsfähigkeit, um von da ab zur Ermüdungs- und darüber hinaus sogar zur Lähmungskurve zu sinken.

Es können alle Phasen der Arbeitskurve, wenn eine Rückkehr zur Ruhe stattfindet, immer wieder aufs neue durchlaufen werden. Nur die Lähmung gestattet keine Rückkehr zur baldigen Erholung. Tätigkeit, Maximum der Leistungsfähigkeit und die Ermüdung sind Summanden der Uebung. Übermüdung und Erschöpfung sind gesundheitsschädlich.

Die biologischen Grundlagen der Ermüdung waren schon von jeher Gegenstand der eingehendsten Untersuchung namhaftester Spezialforscher. So äusserte der kürzlich verstorbene italienische Physiologe Mosso in seiner bekannten Monographie „Die Ermüdung“ die Ansicht, dass die Ermüdung ein „chemischer Vorgang“ ist. Als Produkt desselben entsteht eine schädliche Substanz, welche die Muskelkontraktion verhindert. Experimentell gelang es ihm, das Vorhandensein solcher lähmend wirkender Stoffwechselprodukte nachzuweisen; denn nach innerer Durchspülung des Muskels mit einer indifferenten Flüssigkeit konnte die Ermüdung beseitigt und seine Kontraktion wieder hergestellt werden. Die Beobachtungen von Helmholtz, dass der arbeitende Muskel eine grössere Menge in Alkohol löslicher Stoffe enthält, und von Du Bois-Reymond über den Umschlag der schwach alkalischen Reaktion des ruhenden Muskels in eine saure während der Arbeit führten den Forscher zu der Ansicht, dass „im arbeitenden Muskel Auswurfstoffe erzeugt werden, welche giftig sind.“ Diese Zerfallstoffe, welche

sich nach Mosso im Blute anhäufen, sind die Ursache der Ermüdung; sie rufen—wenn ihre Menge die physiologische Grenze überschreitet—Krankheiten hervor, ja führen sogar zum Tode, wie es uns Verworn an dem dramatischen Geschick des Läufers von Marathon sehr drastisch schildert. Aus Mossos Versuchen ergab sich des weiteren die Tatsache, dass es unter physiologischen Bedingungen nur eine Ermüdung gibt, die nervöse. Sie äussert, wie es neuerdings Schittenhelm hervorhebt, zweifellos eine lokale Steigerung der Stoffwechselvorgänge, die ganz im Sinne einer lokal zellulären Beeinflussung an Ort und Stelle schädigende Wirkungen entfaltet. Im allgemeinen Stoffwechsel braucht eine solche lokalisierte Steigerung absolut nicht zum Ausdruck kommen.

Auf dem Gebiete der Ermüdungsforschung in biologischer Hinsicht sind die Allgemeindarstellungen bei den älteren Ergebnissen eines Ranke und Mosso stehen geblieben. Erst die moderne experimentelle Therapie, welche sich die Erfahrungen der Immunitätsforschung zunutze gemacht hat, eröffnet die Möglichkeit, die Kenntnis jener Ermüdungsstoffe wesentlich zu fördern. In dieser Richtung bewegen sich denn auch die Forschungen von Professor Dr. W. Weichardt—Erlangen, welche die Grundlage zu den nachfolgenden Versuchen bilden.

Die Wirkung des von Weichardt zuerst aus den Muskeln übermüdeter Tiere, später künstlich aus Pflanzeneiweis hergestellten toxischen Eiweisspaltproduktes, des Kenotoxins, kann durch einen sogenannten Antikörper aufgehoben werden.

Was die Eiweisspaltprodukte von Kenotoxincharakter anbetrifft, so vermag man deren Existenz durch die neueren Methoden der Immunitätsforschung festzustellen. So haben besonders neueste diagnostische, im Reagenzglas ausführbare Methoden hierzu recht wesentlich beigetragen. (s. das nachfolgende Referat.)

Das gereinigte Kenotoxin verursacht, kleineren Tieren unter die Haut gebracht, Temperaturabfall bei diesen, verlangsamte Atmung und Sopor. Sind die Versuchstiere aber vorher mit dem Antikörper des Kenotoxins, dem Antikenotoxin vorbehandelt worden, so bleiben sie munter, ihre Atmung wird nicht verlangsamt, sie verfallen nicht in Sopor.

Ebenso kann das im lebenden Organismus der Warmblüter, also auch der Menschen bei Muskelbewegung entstehende und nach und nach Ermüdung veranlassende Kenotoxin durch vorheriges Einverleiben von Antikenotoxin so entgiftet werden, dass die Leistungsfähigkeit des betreffenden Individuums erhöht wird, und zwar nicht allein die körperliche, sondern auch die geistige.

Zur Ermittlung des jeweiligen Ermüdungszustandes diene die Weichardt'sche Hantelfussübung, welche folgendermassen ausgeführt wird:

Die Versuchsperson nimmt in jede Hand eine 2 bis 5 kg schwere Hantel und dreht sie bei horizontal vorwärts gestreckten Armen nach dem Pendelschlage einer Sekundenuhr oder eines Metronoms um ein Viertel des Kreisbogens nach aussen und dann wieder nach innen. Zugleich hebt sie, ebenfalls im Sekundentakte, abwechselnd den rechten und dann wieder den linken Fuss bis zur Kniehöhe. Schon nach 20 bis 30 Sekunden wird die anfangs spielend leichte Übung allmählich schwieriger und plötzlich sinken die Arme infolge hochgradigster Ermüdung. Dieser Zeitpunkt, welcher durch Zählen der Sekunden sehr genau festgestellt werden kann, gibt die Stärke des vor der Übung bereits vorhandenen Ermüdungsgrades ebenso sicher an, wie die Ergographenkurve.

Die Vorzüge dieser Ermüdungsmassmethode liegen einmal in der ausgiebigsten Toxinproduktion fast der gesamten Körpermuskulatur. Notwendig zur Erzielung möglichst gleichbleibender Standardleistungen ist (schon hinsichtlich der aktiven Immunisierung gegen Kenotoxin) ein wochenlanges Training, welches sich leicht auch bei schulhygienischen Versuchen im Turnunterricht durchführen lässt. Durch langandauerndes Training wurde eine, der Individualität der Versuchsperson entsprechende *Konstanz der Kurvenwerte* erreicht.

Nachdem so eine alltäglich ziemlich gleiche Leistungsgrösse festgestellt und ihre Beeinträchtigung durch die geistige Arbeit ermittelt worden war, gelang es, antikörperliche Beeinflussungen zu konstatieren.

Es wurden zu diesem Zwecke etwa 10 bis 20 Tropfen des Weichardt'schen Antikenotoxins, welches von der Firma Kalle & Co. in Biebrich a. Rh. fabrikmässig hergestellt wird, gelöst in 10 ccm physiologischer Kochsalzlösung (0,8 : 100) mittels eines Handsprayapparates reichlich verstäubt. Die mit dem Antikörper beladenen feinen Wassertropfchen gelangen auf die Schleimhaut der Respirationsorgane. Dort wird ein Teil des Antikörpers aufgenommen und kommt in den Blutkreislauf, woselbst er das vorhandene oder entstehende Kenotoxin beeinflussen kann, falls die natürlichen Antistoffe des Organismus hierzu nicht ausreichen.

Durch Einverleibung des Antikenotoxins stieg zunächst die Anfangsleistung. Es dürfte dabei der sich im Körper vollziehende Vorgang folgender sein: Kleine Mengen des inkorporierten Antikörpers unterstützen den Organismus in seiner Fähigkeit, die bei der Hantelfussübung sich bildenden Ermüdungsstoffe zu entgiften, so dass volle Ermüdung erst später als bei der Standardleistung eintritt.

Das Antikenotoxin scheint imstande zu sein, die Körperfrische zu heben, die natürliche Erholung des Organismus fördernd zu unterstützen und die Grenzen der körperlichen und geistigen Leistungsfähigkeit herauszurücken, so dass das Stadium der Kräftedepression erst viel später erreicht wird.

Es wurden sodann weitere Untersuchungen über die Hebung geistiger Leistungsfähigkeit mittels der Rechenmethode vorgenommen. Die Versuchspersonen mussten in einer gewissen Zeit, am Anfang und zu Ende eines vierstündigen Unterrichts Aufgabenreihen aus den vier Rechenspezies lösen.

Bei Beurteilung der Leistungsfähigkeit wurde die Quantität der Arbeit in den Vordergrund gestellt. Die Arbeitsleistung wurde gemessen durch die Zeit, welche gebraucht wurde, einmal im Zustande geistiger Frische, dann aber auch im Zustand der Ermüdung, um eine gleiche Anzahl von Resultatziffern zu errechnen. Das ermüdete Hirn arbeitet langsamer. Das Aneinanderfügen von Vorstellen erfordert mehr Zeit als im ausgeruhten Zustande. Das erwiesen auch Kontrollversuche, bei denen stets die Rechengeschwindigkeit am Ende des Unterrichts herabgemindert war. Eine ganz bedeutende Erhöhung der Rechengeschwindigkeiten zeigte sich dagegen nach dem Einatmen von Antikenotoxin bei zahlreichen Versuchen.

Die Tatsache einer verbesserten Leistung findet ihren weiteren Ausdruck in der verbesserten Qualität, die sich darstellt in einer geringeren Fehlerzahl und in verminderten Korrekturen. Während z. B. die Gesamtfehlerzahl bei einer Reihe von Kontrollversuchen von 784 auf 970 *stieg*, *sank* sie bei Antikenotoxinversuchen von 650 auf 582. Es zeigt sich hierin ein merkliches Anwachsen der geistigen Intensität. Wichtiger noch erscheint die Abnahme der vorgenommenen Korrekturen. Sie sind im wesentlichen eine Folge der Ermattung des Körpers als auch der Verengung des Gesichtsfeldes und der Abnahme der Sehschärfe, wie sie ja z. B. neuerdings Baur nach geistiger Anstrengung konstatiert und zur Begründung seiner eigenen, neueren Ermüdungsmassmethode mittels der Augenakkommodation benutzt hat. Der genannte Forscher führt aus, „dass die Übersättigung des Körpers mit Ermüdungsstoffen imstande ist, die Augennerven ihre Stabilität verlieren zu lassen und ihre Tätigkeit zu einer unsicheren, flüchtigen, geschwächten zu gestalten.“ In diesem Hemmungszustande haben wir wahrscheinlich die Veranlassung zu einer Reihe von Korrekturen zu suchen, die besonders bei Schülern auftreten, die mehr mit den Zahlbildern als den Zahlvorstellungen operieren.

Durch alle diese Untersuchungen mittels der Rechenmethode liess sich erweisen, dass bei fortgesetzter geistiger Arbeit die Leistungen qualitativ und quantitativ herabgemindert werden. Die schon bei gewöhnlicher Ermüdung erzeugten hochmolekularen Eiweisspaltprodukte sind einer Beeinflussung durch Antikenotoxin zugänglich. (Näheres darüber cf. Lorentz, Die Resultate der modernen Ermüdungsforschung und ihre Anwendung in der Schulhygiene. Leipzig - Voss - 1911.)

Neuerdings hat auch Marx Lobsien—Kiel den Einfluss des Antikenotoxins auf die Hauptkomponenten der Arbeitskurve untersucht. Auch er bestätigt einen günstigen Einfluss des Antikenotoxins auf die Leistungsfähigkeit. Während sich z. B. bei Kontrollversuchen der Rechenübungen ein Minus von 34,1% ergab, betrug der Verlust bei der Antikenotoxinwirkung, bei der Autosuggestion sicher ausgeschlossen war, da die Versuchsperson über den Antikenotoxingehalt des Sprays im Unklaren blieb, nur noch 4%. Weiterhin konstatierte er eine günstige Wirkung des Antikenotoxins in der erheblich schnelleren Entfaltung der Übungswirkung. Er kommt zu dem Schluss, dass das Antikenotoxin auch bei seinen Versuchen „eine Hemmung der Ermüdungswirkungen und eine Hebung der Leistungsfähigkeit zu bewerkstelligen vermochte.“

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B.

Der Nachweis des Kenotoxins in der Ausatemluft

VON

GERHARD STROEDE

Frühere Forscher glaubten in der Expirationsluft, bzw. im Atemkondenswasser Giftstoffe mit Alkaloidcharakter nachgewiesen zu haben. Prof W. Weichardt—Erlangen, der tierische und pflanzliche Exkrete mit den Mitteln der von ihm ausgebildeten Kenotoxinforschung untersuchte, konnte jedoch feststellen, dass heftig toxisch wirkende, alkaloidartige Substanzen in der Ausatemluft nicht vorkommen; dagegen

zeigte sich im Dialysatrückstand von tierischen und menschlichen Ausatemwässern eine höhermolekulare, mässig toxisch wirkende Eiweiss-substanz, welche, Mäusen injiziert, die Erscheinungen der Kenotoxinwirkung, Temperatursturz, Atemverlangsamung und Sopor hervorrief. Die mit Antikenotoxin passiv immunisierten Versuchstiere zeigten dagegen nach Injektion gleicher Mengen dieser Substanz die angegebenen Ermüdungserscheinungen nicht.

Weichardt hat verschiedene Methoden beschrieben, die es gestatten, durch Reaktionen in vitro auf die Anwesenheit, bezw. auch auf die vorhandene Menge des Kenotoxins in der Ausatemluft zu schliessen. Von diesen nimmt an Feinheit und Genauigkeit die Epiphaninreaktion die erste Stelle ein. Sie wurde zu nachstehend beschriebenen Versuchen benutzt.

Um das in der Ausatemluft in Spuren vorhandene Kenotoxin nachweisen zu können, ist es zunächst nötig, dasselbe konzentriert zu fassen.

Zu diesem Zwecke lässt Weichardt eine am besten ältere Person, die mehrere Stunden angestrengt gearbeitet hat, ihre Ausatemluft durch ein winkelig gebogenes Glasrohr in eiskühles Wasser hineinblasen. Die Versuchsperson bläst an dem aufsteigenden Schenkel der Glasröhre; letztere ist mit einem Wattefilter versehen. Beide Massregeln sollen verhindern, dass Speichel in die Flüssigkeit hineingelangt.

Da diese Art der Sammlung stundenlanges Blasen nötig macht, wird neuerdings zwecks Abkürzung des Prozesses der Fellerer'sche Arzneivernebler zur Konzentrierung der in der Ausatemluft enthaltenen Eiweisspaltprodukte benutzt. Ich arbeitete bei meinen Versuchen stets mit diesem Apparat und verfuhr dabei wie folgt:

In den unteren, reagenzglasartigen Teil des Apparats wurden 5 ccm Wasser getan. Mittels des zum Apparat gehörigen Handzerstäubers sprayte ich dasselbe stossweise in den oberen kugelförmigen Teil des Arzneiverneblers hinein. Gleichzeitig wurde in den absteigenden Schenkel eines gebogenen, mit Wattefilter versehenen Glasrohrs, welches mit Hilfe eines Kautschuckringes luftdicht in der grössten Oeffnung des kugeligen Glasballons befestigt war, die Expirationsluft in den Spray hineingeblasen. Die nun im Innern des Apparats an den Wänden herunterfallenden Tröpfchen, welche sich zunächst unten im Ballon ansammeln, wurden durch ein mit dem oberen röhrenartigen Ansatz in Verbindung gebrachtes Glasröhrchen in ein kühl gehaltenes Gläschen geleitet. Eine am unteren Teil des Apparats befindliche zweite Oeffnung wurde während des Arbeitens verschlossen.

Um bei allen Versuchen möglichst quantitativ zu arbeiten und unter sich vergleichbare Werte zu erzielen, nahm ich bei der Gewinnung des Ausatemwassers ein Metronom zu Hilfe.

Das jedesmalige Einblasen währte 20 Sekunden. Die Stärke des

Einblasens war stets möglichst gleichmässig und wurde so bemessen, dass nach 20 Sekunden ein Weiterblasen unmöglich war. Während dieser Zeitdauer wurde 3 mal, in der 1., 7. und 13. Sekunde, durch einen kräftigen Druck auf den Gummiball des Zerstäubers Wasser in den Ballon hineingesprayt. Nach Verlauf des einmaligen Blasens benutzte ich 5 Sekunden zu ausgiebiger Einatmung. Hierauf begann das Einblasen von neuem. So genügte in der Regel $\frac{1}{4}$ stündiges Blasen (— 36 mal), um eine für die auszuführenden Epiphaninreaktionen genügende Menge von Ausatemwasser zu gewinnen. Nur in den Fällen, wo zur Kontrolle 2 Versuche mit gleichen Mengen Ausatemwasser vorgenommen wurden, dauerte das Blasen $\frac{1}{2}$ Stunde.

Bei Benutzung des Fellerer'schen Apparats ist, da durch das Zerstäuben die Wasseroberfläche ausserordentlich vergrössert wird, und die Wasserteilchen in ausgiebigster Weise mit der Ausatemluft in Berührung kommen, in kurzer Zeit eine genügende Anreicherung derselben mit hochmolekularen Eiweisspaltprodukten möglich. Schnelles Arbeiten ist aber Vorbedingung für die Verwendung der dünnen wässrigen Lösungen, da das Kenotoxin in diesen infolge hydrolytischer Vorgänge bald in unwirksame Abbaustufen übergeht.

Schon durch Gewichtsbestimmungen lässt sich nun zeigen, dass Substanzen aus der Expirationsluft vom Wasser aufgenommen worden sind. Dass diese Stoffe organischer Natur sind, ergibt sich beim Verdampfen des Ausatemwassers bis zur Trockne und nachfolgendem Erhitzen des Rückstandes. Es entwickelt sich dann ein deutlich brenzlicher Geruch und die Verdampfungsreste bräunen sich.

Der Nachweis vorhandener hochmolekularer Eiweisspaltprodukte gelingt mit der Weichardt'schen Epiphaninreaktion.

Bringt man zu einem System, bestehend aus Baryumhydroxyd und Schwefelsäure, einesteils vor, andernteils nach der Bildung der Baryumsulfatteilchen Antigene und Antikörper zu einander, so verschiebt sich infolge der Antigen-Antikörperbindung der Phenolphthaleinumschlagpunkt im Baryumsulfatsystem. Diese Verschiebung, welche nach Weichardt die Aenderung der Oberflächenspannung der Teilchen (Mikronen) infolge der Aenderung ihrer Ladung zur Ursache hat, kann austitriert und kurvenmässig bestimmt werden.

Die Methodik der Epiphaninreaktion hat bereits manche Aenderungen und Vervollkommnungen erfahren. Ich benutzte die Form des Viergläserversuchs, wie sie in einer Arbeit von Dr. H. Stötter, Erlangen, „Ueber den gegenwärtigen Stand der Studien mit Epiphaninreaktion“ (Zeitschrift für Immunitätsforschung und experimentelle Therapie, II. Band. 6. Heft. 1911) beschrieben worden ist. Nur modifizierte ich die Versuchsanordnung insofern um ein geringes, als ich zunächst nur

die Mischungen der beiden ersten Versuchsgläser fertig stellte und dann erst an die Beschickung der beiden letzten ging.

Für jede Flüssigkeit wurde ein besonderes Messröhrchen gebraucht, auch wurde auf peinlichste Sauberkeit der Pipetten und Gläser sowie auf exaktes Arbeiten das grösste Gewicht gelegt.

Zunächst galt es, die Zuverlässigkeit und Genauigkeit der Methode und die etwa möglichen und später bei den Versuchen mit Ausatemwasser zu berücksichtigenden Versuchsfehler kennen zu lernen. Es wurden zu diesem Zwecke, nachdem längere Übung im Gebrauch der Weichardt'schen Mikrapipette, welche allein bei diesen subtilen Versuchen brauchbare Resultate zu liefern imstande ist, vorangegangen war, viele „blinde Versuche“ in der Weise ausgeführt, dass in die Gläser nicht antigen- und antikörperhaltige Flüssigkeiten, sondern zunächst je 1 ccm Wasser, darauf das Baryumsulfatsystem und zuletzt der Indikator gebracht wurde. Die nun beobachteten Versuchsfehler waren äusserst minimal. Nur einmal trat eine 1 ccm $\frac{n}{1000}$ H₂ SO₄ entsprechende Verschiebung des Phenolphthaleinumschlagspunktes der Endmischungen in Erscheinung. In allen übrigen Fällen war der Fehler geringer, häufig sogar gleich 0; der durchschnittliche Versuchsfehler wurde nach 23 blinden Versuchen mit 0,3 ccm berechnet.

Bei den nunmehr vorgenommenen Versuchen mit Ausatemwasser ergaben sich jedoch Verschiebungen des Neutralitätspunktes bis + 4,5 ccm, Verschiebungen, die weit ausserhalb der Versuchsfehlergrenze lagen, und die deshalb auch nur als Folge der Antigen-Antikörperbindung, d. h. als Wirkung vorhandenen Kenotoxins gedeutet werden konnten.

Es zeigte sich nun, dass im ermüdeten Zustande reichlichere Mengen von Kenotoxin in der Ausatemluft vorhanden waren als im unermüdeten. In letzterem Zustande konnte dasselbe überhaupt nicht mit Sicherheit nachgewiesen werden. Versuche mit Ausatemwasser, das unermüdet gewonnen worden war, ergaben häufig negative Reaktionen. Manchmal verliefen diese zwar positiv, jedoch waren die Titerwerte dann so klein [bis + 0,6 ccm] dass sie in die mögliche Fehlergrenze fielen und man nicht mit Bestimmtheit entscheiden konnte, ob die Verschiebungen des Phenolphthaleinumschlagspunktes nur kleine Versuchsfehler anzeigten, oder ob winzige Mengen von Kenotoxin ihre Ursache waren.

Mit Ausatemwasser, das im Zustande der Ermüdung gewonnen worden war, vorgenommene Viergläserversuche ergaben dagegen positive Epiphaninreaktionen, deren Titer stets ausserhalb der Fehlergrenze lag. Je nach dem Grade der Ermüdung schwankten die gefundenen Werte bei den bisher ausgeführten Versuchen zwischen 1,0 und 4,5 ccm. Besonders gross waren sie, wenn ungewohnte körperliche Arbeit dem Versuch vorangegangen war. Sie betrugen dann 3,5 ccm oder mehr. Manchmal konnte bemerkt werden, dass die gefundenen Titer-

werte für vorhandenes Kenotoxin nicht mit dem zur Zeit empfundenen Mattigkeitsgefühl in Einklang standen. Das letztere kann also als Mass für den vorhandenen Ermüdungszustand nicht gelten, worauf auch schon andere Autoren, z. B. Burgerstein, hingewiesen haben.

Es sollte jetzt auch die individuelle Toxinkurve des Tages festgestellt werden. Zu diesem Zwecke wurde oftmals morgens, mittags und abends Ausatemwasser in der angegebenen Weise gewonnen und verarbeitet. Im übrigen verlief die Tagesarbeit in der gewohnten Weise; vormittags wurde unterrichtliche Tätigkeit ausgeübt, der Nachmittag war teils der Erholung gewidmet, teils wurde er mit frei gewählter geistiger Arbeit verbracht.

Des Morgens ergaben sich meistens negative Epiphaninreaktionen, oder aber positive Werte, die innerhalb der Fehlergrenze lagen. Der Nachweis von Kenotoxin gelang zu dieser Tageszeit also in der Regel nicht. Während der Nachtruhe wird eben bei ausgiebigem gesundem Schlaf jede Ermüdung kompensiert und jedenfalls alles im Körper vorhandene Kenotoxin abgesättigt. Bei schlechtem, unruhigem Schlaf kann dieser Effekt natürlich nicht in dem Masse eintreten. So fand ich nach einer äusserst schlecht durchschlafenen Nacht am Morgen den Wert 2,1 ccm für das in der Ausatemluft vorhandene Kenotoxin. Jedoch war dies ein anormaler Fall.

Des Mittags war der Kenotoxinvorrat am grössten. Die unmittelbar nach 5 bzw. 4 stündigem Unterricht und einem Gange von 7 Minuten Dauer vorgenommenen Versuche zeigten stets positive Epiphaninreaktion und es wurden Werte wie 1 - 1,5 - 1,7 - 2 - 3 - 3,5 - 4,5 ccm als quantitative Ausdrücke für das jeweils vorhandene Kenotoxin festgestellt.

Die des Abends gefundenen Titerwerte waren wieder geringer und überschritten + 1 ccm meistens nicht.

Während der unterrichtlichen Tätigkeit, bei der eine grosse Konzentration der Aufmerksamkeit, nach Mossa eine der unerlässlichsten Vorbedingungen für das Entstehen geistiger Ermüdung nötig ist, wurden also auch besonders viel Ermüdungsstoffe im Körper angehäuft, während bei der freigewählten Beschäftigung des Nachmittags jedenfalls nur kleine Mengen von Kenotoxin produziert werden.

Der durch vorstehende Untersuchungen festgestellte regelmässige Wechsel im Kenotoxingehalt der Ausatemluft hat natürlich nur individuelle Geltung. Je nach Lebensweise, Beruf und Beschäftigungsart wird er bei anderen Personen auch in abweichender Weise in Erscheinung treten.

Mit der Bestimmung des Kenotoxingehaltes der Ausatemluft wurde regelmässig die Weichardt'sche Hantelfussübung verbunden. Es war eine lange Trainingsperiode vorangegangen, so dass bei den Übungen

nahezu konstante Kurvenwerte erzielt wurden. Zur Vermeidung der Autosuggestion zählte ich die Sekundenleistungen absichtlich niemals selbst mit; diese Arbeit wurde von einer bei den Versuchen regelmässig assistierenden Person übernommen. Trotzdem zeigten sich nun auffällige Übereinstimmungen in den Ergebnissen beider Versuchsreihen:

Je grösser die Leistung bei der Hantelfussübung, desto geringer war im allgemeinen der bei der Epiphaninreaktion gefundene Wert für das in der Ausatemluft vorhandene Kenotoxin, und umgekehrt.

Die Ergebnisse verliefen nicht immer ganz genau in gleichem Sinne, jedoch in der Regel; nur wenige Ausnahmefälle wurden beobachtet.

Wurden bei der Hantelfussübung 87 oder mehr Sekundenleistungen erzielt, so ergab die Epiphaninreaktion immer ein negatives Resultat, bei geringerer Leistungsfähigkeit zeigten sich stets positive Reaktionen. Die Titerwerte derselben betrugen bei 86–83 Sekundenleistungen der Hantelfussübung weniger als 1 ccm, von 82 an 1 ccm oder mehr.

Beispielsweise wurden

bei 85 Sekundenleistungen der	Hantelfussübung	= +0,6 ccm
“ 82	“ “ “	= +1,0 “
“ 78	“ “ “	= +2 “
“ 74	“ “ “	= +3,5 “

als Werte für vorhandenes Kenotoxin gefunden.

So konnte schliesslich durch meine vergleichenden Versuche der von Lorentz erwiesene Satz: „Die von Weichardt auf Grund seiner Ermüdungsstudien ausgebildete Methodik der Hantelfussübung gestattet es, nach einer gewissen Übungszeit und bei Ausschliessung aller suggestiven Momente die Stärke des vor der Übung bereits vorhandenen Ermüdungsgrades zuverlässig anzugeben,“ vollkommen bestätigt werden.

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ZUSAMMENFASSUNG:

A.

1) Jede Arbeit—körperliche sowie geistige—erzeugt Stoffwechselprodukte, die in normalen Mengen *Ermüdung*, im Übermass aber *Übermüdung* hervorrufen.

2) Als Ermüdungsstoffe sind die von Weichardt entdeckten und später von ihm künstlich hergestellten hochmolekularen Eiweisspaltprodukte—*Kenotoxine*—anzusprechen, deren Wirkung durch anti-körperartige Stoffe, welche sich damit verkuppeln, aufgehoben werden können.

3) Durch letztere lässt sich eine Erweiterung der Leistungsgrenzen herbeiführen.

4) In der Zahl der Sekundenleistungen bei der *Fusshantelübung* haben wir—nach sorgfältigem, vorangegangennem Training—ein zuverlässiges Mass der körperlichen Leistungsfähigkeit.

5) Durch exakte Rechenübungen lässt sich an Hand der erzielten Rechenzeiten, der Fehler und der Korrekturen die Qualität und Quantität der geistigen Arbeit bestimmen.

B.

1) Die von Weichardt entdeckten hochmolekularen Eiweisspaltprodukte „Kenotoxine“ lassen sich im Ausatemwasser nachweisen.

2) Mittels des Fellerer'schen Apparats war es möglich, dieselben in genügender Konzentration zu erhalten.

3) Die Feststellung der Kenotoxine durch deren Antikörper in vitro gelang mit der Weichardt'schen Epiphaninreaktion, deren Genauigkeit durch allerminimalste Differenzen bei blinden Versuchen erwiesen wurde.

4) Versuche mit Ausatemwasser ergaben Verschiebungen des Phenolphthaleinumschlagpunktes, die weit über die Versuchsfehlergrenze hinausgingen und deshalb nur als Wirkung vorhandenen Kenotoxins gedeutet werden konnten.

5) Die Sekundenleistungen gleichzeitig vorgenommener Hantelfussübungen zeigten mit den Titerwerten der Epiphaninreaktionen auffällig gleichsinnige Resultate.

GIBT ES IN DEN HÖHEREN LEHRANSTALTEN EINE ÜBERBÜRDUNG?

VON

LEO LIEBERMANN

Es gibt keine Frage über die die Ansichten so geteilt sind, wie die der Überbürdung in den sog. höheren Lehranstalten, Gymnasien, Realschulen, etc. Es ist auch nichts natürlicher, denn sie existiert oder existiert nicht, je nach der Schule, die der Eine oder Andere aus eigener Erfahrung kennt. Unter "Schule" verstehe ich hier vor allem die *Lehrer*; denn die Verschiedenheiten in der Beantwortung der vorliegenden Fragen findet man ja auch dann, wenn es sich um Schulen mit gleichem Lehrplan und Betrieb handelt. Die Unterschiede können dann nur in den *Lehrern* liegen, denn es ist nicht anzunehmen, dass z. B. in *einer* Stadt constant eine Auslese des *Schülermaterials* stattfindet, derart, dass der gute oder schlechte Ruf einer Anstalt dem guten oder schlechten Schülermaterial zuzuschreiben wäre.

Ich behaupte, dass Überbürdung nur dort ist, wo die Lehrer schlecht sind und dass gute, fähige Lehrer ihre Schüler nicht überbürden. Das wird sofort einleuchten, wenn man auf die Frage antwortet: was ist ein schlechter Lehrer?

Schlecht ist vor allem derjenige Lehrer, der seinen Gegenstand nicht völlig beherrscht, der selbst keinen Überblick über das Ganze besitzt, sich selbst vor Stunde zu Stunde mühsam vorbereiten muss. Unter Vorbereitung verstehe ich nicht die Fertigstellung des Planes die unter allen Umständen notwendig ist, sondern das Erlernen desjenigen, was in der Unterrichtsstunde vorgetragen werden soll. Unter solchen Umständen ist diejenige Volubilität ausgeschlossen, die den Lehrer befähigt, das was erklärt werden muss, das was zum gründlichen Verstehen notwendig ist, durch Zurückgehen auf die Grundlagen, durch Herbeiziehen von Analogien, oder durch Beleuchtung von verschiedenen Seiten, oder auch durch Variation der zum Begreifen führenden Wege, dem Verständniss einer vielköpfigen Menge anzupassen.

Die Folge ist: psychische Überanstrengung, nervöse Überreizung mit all ihren Folgezuständen der Schüler besonders der besseren, die gerne begreifen möchten, sich aber vergeblich bemühen, da der Schlüssel fehlt.

Schlecht ist der Lehrer, der die zu lösenden Probleme, die Ziele einer nun kommenden Gedankenarbeit, den allgemeinen Wert und Nutzen

gewisser Kenntnisse, nicht von vornherein klar ausspricht, resp. nicht genügend hervorhebt und beleuchtet.

Eine langwierige Geistesarbeit, ohne klares Ziel ist unerfreulich, ermüdend und pädagogisch schon darum verwerflich, weil sie weder mit dem allgemeinen menschlichen Zug rechnet, der in der Frage gipfelt: Wozu ist das gut? Noch mit unfreiwilligen Unterbrechungen, die das aufmerksame Verfolgen einer Deduction unmöglich machen/da dann sehr leicht ein Glied in der Kette fehlt/und endlich, weil sie auf die grossen Vorteile verzichtet, die die selbständige Gedankenarbeit bietet, wenn die Frage klar aufgestellt wird: wie kann ich das Problem lösen, wie kann ich das Ziel erreichen?

Schlecht ist der Lehrer, der verdrossen, ohne Liebe zu seinem Beruf und ohne Begeisterung für sein Fach an die Arbeit geht; der wohl ein grimmiges Vergnügen am Tadel, aber nur ein sehr mässiges am Lob findet, der mithin bei den Schülern jene psychische Depression hervorruft, die der grösste Feind jeglicher Arbeit ist und frühzeitig jene Ermüdung und nervöse Überreizung erzeugt, die die gewöhnliche Folge aussichtslosen Strebens ist, aussichtslos in Betreff der Anerkennung; diese fördert die Freude an der Arbeit, ja erzeugt sie sogar, während die stete Furcht vor Tadel kein solches Gefühl aufkommen lässt.

Man kann sagen: die einzige, ausschliesslich durch die Schule verursachte also wirkliche Schulkrankheit ist die Überbürdung, die nervöse Überreizung mit ihren bekannten Symptomen und Begleiterscheinungen: Unruhiger Schlaf, Appetitlosigkeit, Blutmangel, etc., Da nun die Ursache dieser Schulkrankheit wie wir gesehen haben, die notwendige Folge eines schlechten Unterrichts ist, ist es die Aufgabe der Schulhygiene, vor allem auf eine sorgfältige Auswahl des Lehrpersonals, auf eine gründliche, die Lehrer zu wirklichen Fachmännern ausbildende Lehrerbildung zu dringen, gleichzeitig aber auch auf eine derartige Verbesserung der socialen Lage, dass der Lehrerberuf genügende Vorteile biete, auch die besten, fähigsten Kräfte anzuziehen.

Auch die grössten materiellen Opfer sind nicht zu scheuen, denn es giebt kein besser angelegtes Geld als das, was auf tüchtige Lehrer verwendet wird.

SESSION THIRTEEN

Room C.

Wednesday, August 27th, 9:00 A.M.

MENTAL HYGIENE AND THE HYGIENE OF THE MENTALLY ABNORMAL CHILD (Part One)

WILLIAM H. BURNHAM, Ph.D., *Chairman*

DR. L. KAUFFMAN, Buffalo, N. Y., *Vice-Chairman*

Program of Session Thirteen

WILLIAM H. BURNHAM, Ph.D., Professor Pedagogy and School Hygiene, Clark University, Worcester, Mass. "Mental Hygiene in the School."

F. H. PIKE, Ph.D., M.D., Assistant Professor Physiology, Columbia University, New York City. "The Nervous Mechanism of Motor Learning and of Habit Formation."

JAMES W. PUTNAM, M.D., Professor of Nervous Diseases, University of Buffalo, Buffalo, N. Y. "Exercise and Education of the Nervous System."

S. ADOLPHUS KNOPF, M.D., Professor of Medicine, Department of Phthiotherapy, Post Graduate Medical School, New York. "Some Fragmentary Notes on How to Preserve and Increase the Physical, Mental and Moral Vigor of Our School Children."

WILLIAM T. SHANAHAN, M.D., Superintendent Craig Colony for Epileptics, Sonyea, New York. "Hygiene of the Epileptic School Child." Read by Dr. G. Kirby Collier.

A. C. ROGERS, M.D., Superintendent of Minnesota School for Feeble-Minded and Colony for Epileptics. "The Village Community for the Feeble-Minded." Manuscript not supplied.

FRANKLIN W. BARROWS, A.M., M.D., Medical Inspector of Schools, Buffalo, N. Y. "The Present Attitude of the Bureau of Child Hygiene of the City of Buffalo toward the Defective Child."

Paper Presented in Absentia in Session Thirteen (Read by Title)

SIMON R. KLEIN, M.D., Ph.D., One Time Professor Histology and Embryology, Fordham University, Director of the Williamsbridge Pathological, Bacteriological and Chemical Laboratories, New York. "Prevention of Nervousness Among School Children."

MENTAL HYGIENE IN THE SCHOOL

BY

WILLIAM H. BURNHAM

I have no apology either to hygiene or to pedagogy for choosing this subject. From the point of view of hygiene it is better to prevent mental disorder by observing the principles of hygiene in the school than to cure mental disease by re-education in the sanitarium. If education is necessary for the mental health, it is better to give it before rather than after nervous breakdown. As far as pedagogy is concerned, I hope to show that there is no conflict between a sound doctrine of pedagogical efficiency and the scientific teachings of mental hygiene.

The application of the principles of mental hygiene in school work is neither pedantic nor fanciful. Let us take the principle of a suitable alternation of periods of work and rest for illustration.

The vast number of investigations of the optimum conditions of work and the causes of fatigue made during the last twenty-five years, I have not time to enumerate. Some of the important results will be presented in other papers; but one outcome of the whole investigation has been this, to make emphatic the following points: It appears that work as well as rest is necessary for the health of the human organism; that both function and relaxation are necessary; that the explosion of energy as well as the storing up of energy is a condition of health; that by working hard with close concentration some degree of immunity to fatigue may be attained; and, on the other hand, that rest is equally important for efficiency; finally, that in mental work the pace is quite as important as the time spent in study. Recent psychological experiments have shown the great improvement in efficiency effected by regard for these principles. Let me recount this somewhat in detail.

Some years ago I had the opportunity to make a brief study of Retroactive Amnesia, of that class of cases where a shock or the like obliterates the memory for a brief period preceding the accident. Such cases are familiar to everyone perhaps. The following represents a typical one:

"A farmer spent his morning in his usual vocations. Then he shelled some corn, afterwards worked in his garden, then harnessed his horse and took a ride for a mile. At the end of this ride, he was thrown from his wagon and seriously injured his head. He remained unconscious for some time, and then when restored remembered the work of the early morning, dimly recalled the shelling of the corn, but remembered nothing of what occurred afterward."

Why could he not remember the events immediately preceding the shock? *

From such cases I found evidence that led to the tentative conclusion that the amnesia was due to the fact that the memory was never completely organized. That new impressions may become a part of the permanent store of memory it is necessary that a certain period of time should elapse in order that a process of organization or consolidation may take place. In normal memory these processes of organization are continually going on, and in order that ideas may be permanently remembered sufficient time must elapse for the organization to be completed. A shock or the like that arrests these processes of organization inhibits the memory; and distracting impressions and occupations that cause interference of association and confusion lessen the memory.

Bergström and others have since found experimental evidence of this process of consolidation. Müller and Pilzecker found that in learning nonsense syllables less was retained if immediately after learning a series the observer was required to concentrate attention on some other task—the careful observation of a picture or the like—and they assumed that the mental strain of the latter checked the consolidation process necessary for a permanent memory. This result strongly suggests also that interference of association occurred due to the task requiring attention.

That interference of association is especially likely to occur in the first few minutes after anything has been learned seems to be most strikingly illustrated by these experiments of Müller and Pilzecker. After the learning of a series of nonsense syllables by the method of paired associates they gave the observer a task requiring concentration of attention a few seconds after the learning of the original series was completed. Again in another series the task requiring attention was given six minutes after the original series was learned. A test was made of what was retained an hour and a half afterwards; and it was found that of the first series only 28 per cent. was remembered, of the second series 49 per cent. This is remarkable evidence that a process of consolidation requiring time does occur. In the case of the latter the process of organization or consolidation of the original series had been largely completed. In the first series there was not time for organization before the distraction was given, hence less was remembered, largely probably on account of the greater interference of association.†

The fact, which seems well established, that before the material learned has been thoroughly organized there is likely to be interference

*Retroactive Amnesia, *Amer. Jour. of Psychology*, Vol. XIV, pp. 118-132.

†See *Orderly Association as a Condition of Mental Health*, by Wm. H. Burnham, *Ped. Sem.*, Sept., 1913, pp. 360-390

of association, with all methods except the recognition method, and the further fact that when the new material has been thoroughly organized no interference is likely to occur, are distinctly significant for the hygiene and methodology of school work.

The practical bearing of this is obvious on a moment's reflection. Haste in learning defeats its own end, and a short rest may frequently be distinctly more advantageous than continued work. For the organization of a permanent memory and to avoid confusion, it is especially necessary that suitable periods of rest should occur between the learning of disparate topics. In the school room, for example, from purely pedagogical reasons, not to mention hygiene, it is usually wise to give a rest of five or ten minutes, at least, after one recitation or the study of one subject, before taking up a different one.

Especially after the learning of a fact or principle of prime importance a rest of a few minutes to give time for the organization of the memory may be a distinct advantage. Dr. Book tells me that in his laboratory experiments in learning, all his subjects instinctively stopped after a difficult passage. In the school we feel that there is not time for this; but the hurry from one topic to another in the ordinary class drill does not usually mean efficiency. Many points are crowded into the lesson, there is little or no time for drill and the application of principles. One minute before the close of the hour the lesson is assigned for the next day without explanation or illustration.

In the modern study of science, especially in the laboratory, a better method has often been adopted; but even in the study of science, the old methods of dictation, crowding and hurry, creep in. The following description of class exercises in chemistry, written by a student as a mere exercise in English composition has fallen into my hands and will be recognized as typical of what happens in many classrooms.

"The gong strikes, and the class comes to order. Everyone has pen ready and notebook open to take notes on the coming lecture in chemistry. The teacher begins by passing around specimens of iron, cobalt and zinc. How fast she talks, and how nervous the class gets in trying to take all the notes. These specimens, too, they are handed at the very moment when the instructor is dictating the Periodic Law. A whisper arises, 'Please repeat the Law, we did not hear the whole of it.' Then, there are experiments. One experiment does not work well. 'We shall leave that and return to it.' On we go to another demonstration, and still another, our pens flying all the while. The bell strikes, and the class leaves, wearied out by trying to grasp all the details of the properties of the three new elements."

From the point of view of hygiene such methods mean interference of association, confusion and worry. It is not a matter of indifference

to health whether five or six hours a day for the long period of school life be spent in hurry, nervousness and confusion, or in developing habits of concentrated attention and orderly association. Precisely such conditions in the schoolroom and often in the home have helped develop that nervous irritability and instability that is proverbial among Americans. It is the disgrace of the school that its graduates so often have to be re-educated in the hospital and the sanitarium. The result of the methods that have prevailed in the school and in American life have brought about, in a large part, even of the best and most highly cultivated people such a condition of hurry and of strain that for many individuals it is impossible to take a vacation. A vacation is a state of mind, not a situation; and only a radical change in the mental attitudes of such persons would make rest and recreation possible.

A wise and successful superintendent told me some years ago that he sometimes thought his best teachers were doing the least for their children, because they were doing too much for them and gave them little opportunity for self-assertion and self-activity. This is typical of many schools; and so it has come to pass from the point of view of hygiene, that often those who teach least instruct the most and the poorest teachers do the most for the children. The oft quoted and frequently resented words of Kraepelin, that the inattention of children is their salvation and uninteresting teachers a hygienic necessity have assumed a new significance. Kraepelin might have added that uninteresting teachers are often a pedagogical necessity, because they alone give children the periods of idleness necessary for the organization of permanent memories of what may happen to be learned.

All this shows concretely what observation and the study of health conditions in the school have already suggested, namely, the need of far more time for pauses and recess in the schools of this country and a better distribution and arrangement of the recesses. And this is in harmony with general progress in education. The emphasis in modern education is shifting from time spent in study to pace of work, from ground covered to essentials mastered, from methods of teaching to methods of learning, from books read to ability to do and habits of healthful activity.

The business of the school is supposed to be learning, but learning means the acquisition of material, its assimilation, its organization as a part of permanent memory. The essential conditions of this process, however, are concentration of attention, orderly association, freedom from hurry and nervousness, mental poise, and an attitude of leisure. Modern studies of efficiency have shown that in lifting pig iron some four times as much work is done when the worker rests half the time.

If children can learn more by resting and playing a fourth of the time, why not let them do it?

Summary.

1. The need for rest and recreation is based on a fundamental characteristic of the nervous tissue.

2. Both for health and for efficiency the pace of work seems to be quite as important as the time spent in study; on the physical side this means within certain limits immunity to fatigue, on the mental side it means a habit of concentration and attention to the present situation.

3. A short period for rest after the learning of important points and between recitations in the schoolroom is often of great value in fixing what has been learned, in organizing it as a part of the permanent memory; and this in turn is likely to be of importance for sound mental development because it tends to produce habits of orderly association and freedom from confusion and worry.

4. Thus from the point of view of hygiene and of efficiency, hurry defeats its own end; and, on the other hand, there is no conflict between the principles of scientific hygiene and the doctrines of sound pedagogy.

THE NERVOUS MECHANISM OF MOTOR LEARNING AND HABIT FORMATION

BY

F. H. PIKE

In the consideration of the subject of motor learning, the lack of space necessarily confines us to the nervous mechanism, with merely the briefest mention of the muscular mechanism concerned. The latter mechanism has been considered by Duchenne (Duchenne, *Physiologie le mouvement*, Paris 1867), and Beevor (Beevor, *Journal American Medical Association*, 1908, li, p. 89; *Ergebnisse der Physiologie* 1908, viii, pp. 326-355).

Any discussion of the central nervous system and its functions at the present day must necessarily be burdened with a huge mass of anatomical and physiological detail and a minimum of principles, since neurology, using the term in its widest significance to include the anatomical, functional and clinical phases of the subject, although comprising a mass of facts beyond the capacity of any one individual fully to assimilate or to believe, has not yet arrived at the stage of many far-reaching generalizations. There are, however, a few ideas or principles of rather wide general application which, to my mind at least, afford a reasonably sure basis of explanation for certain of the phenomena of motor response. These principles must necessarily be stated here without citing many of the facts upon which they are based. For this reason the present paper should be regarded merely as a preliminary statement or abstract.

The first principle of commanding importance is embodied in the phylogenetic development of the central nervous system. (Edinger, *Journal of Comparative Neurology*, 1908.) (C. von Monakow, *Arbeiten aus dem Hirnanatomischen Institut In Zürich*, Heft V. "Lokalisation der Hirnfunktionen;" *Versammlung deutscher Naturforscher und Ärzte zu Königsberg*, II allgemeinen Sitzung Sept. 23, 1910). It has been shown anatomically and experimentally to some degree, that new groups of nerve cells and fiber tracts appear in the central nervous system as we pass from the lower to the higher vertebrate forms. These new tracts and cell groups lead more and more to the cerebrum or become located in it; hence, the greatest development of the cerebrum and its afferent, efferent and association paths occurs in the human nervous system. As a rather familiar example, the pyramidal tract, arising from cells in the cerebral cortex of the higher vertebrates, may be cited as one of the phylogenetically newer tracts. The frog has no

pyramidal tract, but depends upon the rubro-spinal tract as the important part of his motor mechanism. A short statement of the various changes occurring in certain of the tracts and particularly the visual, during the evolution of the vertebrate phylum is given by Donaldson (Donaldson, *American Text-book of Physiology*, Philadelphia, 1896, p. 711; 2 ed., 1901, vol. II, p. 269.)

The second great principle is the principle of localization of function in the central nervous system. It has been shown that the motor nerves for the right hand originate in a definite region of the motor cortex of the left cerebral hemisphere (Krause, cited by von Monakow). Similarly, motor nerves to other muscles or muscle groups arise from cells in definite regions of the cerebral cortex, and not from other cells in any other regions. Although the general subject has commonly been designated by the term cerebral localization, it appears to me that a wider term to include localization in general should be employed, and the conception of localization considerably broadened.

The theory of localization is, however, beset with certain difficulties. Some of these have been pointed out by Franz. (Franz "New Phrenology," *Science* 1912, N. S., XXXV, pp. 321-328; *Psychological Bulletin*, 1913, X, pp. 125-138.) For example, after the motor cortex has been removed and the fibers originating there have degenerated (area A), movements of certain muscles may be brought about by stimulation of other regions of the cerebral cortex (area B). Certain assumptions, either expressed or implied, cast doubt upon the validity of objections of this sort. If it is implied that the cells of the area B have exactly the same functions while area A is intact that they have after area A has been destroyed, we must explain why, when errors of experimentation are avoided, area B does not give the same response while area A is intact that it gives afterward. The postulate of shock enters into practically all arguments of this kind to explain the lack of facility and precision of motion for some time after an injury to the central nervous system, but the ordinary conception of shock is, to state the case mildly, open to certain objections. (Pike, *American Journal of Physiology*, 1909, XXIV, pp. 124-152; *Ibid*, 1912, XXX, pp. 436-450; *Quarterly Journal of Experimental Physiology*, 1913, VII, pp. 1-30.)

More serious objections may, however, be urged against certain of the current views concerning cerebral localization. It has long been taught that certain groups of cells in the motor area of the cerebral cortex constitute the centers for voluntary movement of the arm. Similarly, an area in the left temporal lobe has been regarded as the speech center. If the cells in the motor area be regarded simply as the cells from which motor impulses to the muscles of the arm arise, the idea is correct so far as any evidence now at hand is concerned. (Pike, *Science*,

1912, N. S. XXXV, pp. 619-622.) But if one means by the term "center for voluntary movement" that the whole process of voluntary movement is negotiated by this one group of cells, the idea is most certainly incorrect (Hill, Leonard, *Philosophical Transactions of the Royal Society, London, 1900, Series B, Vol. 193.*) The weighing of motives, the judgment and the decision have all been rendered by other cells at a distance from the motor group. Nor can the cells of the so-called speech area be regarded as the whole of the speech mechanism. Marie, Byron Bramwell, von Monakow, and others have shown that, wherever else the memory of words, the faculty of sentence construction and the choice of words may be located, these things are not the special properties of the cells of the speech area. In the early growth of the knowledge of the nervous system, the lack of exact knowledge of the course of fibers and of their interrelations led to the postulating of many and varied centers for the performance of almost every conceivable function. And of the making of many centers there is even yet no end. But when the processes concerned in even the simplest motor act are closely examined, a little reflection will show that more than one group of cells is concerned, and that there can be therefore, no circumscribed or limited center for any such act. The hypothesis of centers for various acts did good service in its time, and led to much good work on the central nervous system. And it is not a unique thing in science that the foolish and impossible off-spring of a hypothesis should arise in its old age and so plague it as to compel its retirement. So serious has the plague become that many have been led in these latter days to doubt the validity of localization in any phase.

However, pessimism with regard to the localization of function in the nervous system is not only justified for the future (Pike, *Science* 1912, loc. cit.) but has no unanswerable arguments in its favor at the present day. As the conception of circumscribed centers slowly but surely passes out, another conception is ready to take its place and is even crowding it out. The recognition of the fact that nerve cells work in groups is becoming more widespread among workers of the present day.

The first group of neurones requiring examination in any study of the motor mechanism is the afferent group. No response of a motor cell, and therefore no movement, is possible without afferent impulses of some sort, with the possible exception of some of the visceral mechanisms. (Stewart and Pike, *American Journal of Physiology*, 1907, XIX, pp. 328-359.) The general afferent tracts may be divided into somatic sensory, using the term sensory in its wider meaning, and visceral sensory. And in accordance with, or apparently oblivious of, the incoming impulses from all these peripheral sources, as the case may be, the individual shapes its deportment. In the lower vertebrates, the connection be-

tween the afferent fibers and the motor neurones is a very definite and rigid one and the animal's motor responses are accordingly stereotyped and rigid. As Whitman (Whitman, "Animal Behavior;" Marine Biological Lectures, Boston, 1898), expressed it in his classical lecture on the subject, "Organization shapes behavior." And as the same author shows, the difference between a rigid, instinctive response and the first action in which an element of choice, or intelligence, enters is extremely small. The great development of the association tracts, particularly in the cerebrum, in the higher vertebrates makes possible a more extensive and more varied relationship between afferent and efferent impulses, and hence a greater variety of behavior. It is the relatively higher animals alone which can really learn (Herrick, C. J., "The Evolution of Intelligence and Its Organs;" Science, 1910, N. S. XXXI, pp. 7-18) and the average teacher of whatever rank is inclined to think that it is only selected individuals of the particular species attending school that have this capacity in any noticeable degree.

Assuming without further argument that the relation between afferent and efferent neurones forms the general basis of motor learning, it remains to point out certain specific relationships. A group of sense organs about the head—the eye, the ear and the olfactory mucous membrane of the nose, the distance receptors as they are called—are the only ones in the body capable of giving any very extensive or accurate information of objects as a distance. It is through these distance receptors, and particularly the eye and the ear, that the student acquires an idea of what he is expected to do, and it is these same distance receptors that have acquired a peculiar relationship to the cerebral cortex. As Sherrington (Sherrington, "Integrative Action of the Nervous System," New York, 1906, p. 325) expresses it, the cerebral cortex has been evolved upon the distance receptors. The whole relationship gives point to Gaskell's strong insistence upon the importance of the head as the principal means of acquiring information in life. Indeed, the idea becomes axiomatic if the higher animals alone are included.

In addition to the distance receptors, there are other groups of sense organs or receptors concerned in motor learning. The touch, pressure, and temperature endings in the skin—the remainder of the exteroceptive group of specialized nerve endings—and the group of proprioceptors or deep sense organs are also concerned. The rôle of the organs of touch and the like is obvious. The nature of the material to be dealt with, and the finer manipulations of the fingers are dependent upon these particular sense organs. In all skilled movements involving any considerable number of muscles, the deep sense organs in the muscles and joints are also involved, inasmuch as it through the deep sense organs that the position of the various parts of the body with reference to each

other and to the body as a whole is made known. It is by means of impulses from this group also that one becomes aware of the force and extent of the contraction of a single muscle or of a group of muscles.

All of these various classes of receptors send afferent fibers more or less directly to the cerebrum. But there arise in the spinal cord two tracts of nerve fibers which have a peculiar relation to the muscles. These two tracts pass to the cerebellum, and their injury or absence practically always leads to unsteadiness and trembling of the muscles whenever movement is attempted. Similarly, there is unsteadiness and tremor during voluntary movement when there is an injury of the cerebellum itself, and particularly when the injury is in the vermis cerebelli. The conviction is growing, also, that the cerebellum is concerned with the orderly coordinated action or synergic action of rather large groups of muscles.

If the motor response involves the movement of the body from place to place, still another group of afferent impulses is involved. The impulses from the labyrinth of the ear give information of the aspect of the head in space, and particularly of the *change of aspect* of the head in space. (Crum Brown, *Nature*, 1878, XVIII, p. 634.) And from the change of aspect of the head in space the adaption of the rest of the body to the changed position of the head follows. (Wilson and Pike, *Philosophical Transactions of the Royal Society of London*, Series B, 1912, Vol. 203, pp. 127-160.) Enough has been said to show that in any motor response a great number of afferent impulses of various kinds are involved. It is apparent also that some of these impulses go to the cerebrum almost directly. There is much evidence to show also that in the higher animals, nearly all other impulses, including those to the cerebellum, get to the cerebrum before they become effective in influencing the motor response. (Marburg, *Archiv für Physiologie* (Engelmann's) Suppl. Band, 1904, pp. 457-482.)

Attention shifts therefore, from the afferent pathway to the central system. Somewhere these afferent impulses must be gathered up, weighed, considered, a judgment formed and passed on to the motor cells directly. The very complexity of the process is sufficient evidence that no one restricted group of cells constituting a hypothetical center could accomplish all of the things to be done. At the present time there is good, and even sufficient, reason for believing that nearly all of these impulses, including those from the cerebellum, pass through the frontal lobes of the cerebrum on their way to the motor neurones. On this view the cerebrum is an essential part of the great motor mechanism. It is in the cerebrum that the summing up or integrating of all the afferent impulses occurs.

It is at this point in the discussion that another great principle—

the principle of the integrative action of the central nervous system—enters. The present problem of localization of function is not to find circumscribed centers for each particular function, but to trace out in detail all the nerve cell groups and fiber tracts that are concerned in a particular motor response. From the definiteness of the response when all the conditions are alike, *i. e.*, when all the afferent impulses are as nearly alike as possible at two successive times—one is led to believe that a very definite group of cells and fibers are concerned in the performance of a particular act.

From the motor cells in the cerebral cortex, the nerve impulses, now on their way out of the nervous system, pass down the pyramidal tract to the spinal cord. It is probable that the pyramidal fibers do not end about the motor cells of the anterior horn directly (V. Monakow, *Archiv für Psychiatrie* 1895, XXVII, p. 1, p. 386. Redlich, *Neurologisches Centralblatt*, 1897, XVI, pp. 818-832. Schäfer, *Journal of Physiology*, 1899 XXIV, p. XXII. Sutherland Simpson, *Proceedings of the Society for Experimental Biology and Medicine*, 1912, X, pp. 4-6; pp. 46-47) as was formerly taught, but about other cells, possibly those of Clarke's column. This ultimate connection with the motor cells of the anterior horn lies through intercalated neurones between the motor cells and those about which the pyramidal fibers end.

A characteristic of all movements originating in the cerebrum is that groups of muscles are concerned. Beevor (Beevor, *loc. cit.*) classes these groups as (1) prime movers, *i. e.*, the muscles whose contraction brings about the most essential feature of the desired movement, (2) the antagonistic muscles, which are relaxed during the contraction of the prime movers, (3) the synergic muscles, which act in unison or accord with the prime movers, and (4) the fixation muscles, which hold other parts of the body rigid, such as the shoulder and upper arm when movement of the forearm alone is desired. It is probable that a part of the group response is due to the peculiar manner of ending of the pyramidal tracts in the spinal cord. (Beevor, *loc. cit.*)

An act is learned when the group of afferent impulses necessary for the proper guidance of the muscles concerned in the motor response is accurately summed or integrated in the central system, and the motor response is adequate to the demands. Unnecessary afferent impulses are eliminated, since they may be a source of confusion rather than an aid. Unnecessary movements are likewise to be avoided, since they not only add nothing to the accuracy or efficiency of the movement, but may even act as sources of confusion, and always add to the really necessary labor involved.

The process of motor learning may be rendered more difficult by sensory defects, although it may not be impossible. A deaf mute may

learn to talk, the finger tips supplying the afferent impulses necessary for the stage of learning and the impulses from the larynx and other parts of the organs of speech supplying the impulses necessary for a certain degree of control of the act after it is learned. Pain or bodily discomfort increase the difficulty of motor learning since these conditions give rise to afferent impulses which become a source of confusion.

The transition from learning to habit is a gradual one. Habit formation is complete when the act is performed with the minimum of afferent impulses, *i. e.*, with the least attention. The nervous mechanism involved is essentially the same after the habit has become firmly established as on the first day the act was attempted, but the mechanism runs more smoothly. There is no basis for the belief that habit formation involves a lower order of nerve cells, or short cuts through the central nervous system. Any injury to the nervous mechanism involved in learning affects the habit as well. Both learning and habit are essentially reflex in character, being simply responses to afferent impulses.

Much has been written on the function of the spinal cord, the medulla oblongata, the cerebellum and the cerebrum, regarding each as a separate and distinct element of the central nervous system and each acting more or less independently of the other. The results have not been satisfactory; nor, judged by the ability of such a scheme to account for the interaction of various parts of the central system, is there much hope that the results ever will be satisfactory. Such a scheme leaves out of consideration the principle of the phylogenetic development of the nervous system, inasmuch as it assumes that all these structures have essentially the same functions in all vertebrates (Pike, *American Journal of Physiology*, 1912, XXX, p. 440); and it also neglects the fact that some of these parts of the nervous system *e.g.* the cerebellum (Horsley, *British Medical Journal*, April 6, 1907, pp. 803-808. *Brain* 1907-8, XXIX, pp. 446-65) may aid other parts in the performance of a common function. Certainly it is difficult to believe that the real function of the cerebellum is to inhibit the cerebrum, and that of the cerebrum is, among other things, to inhibit the cerebellum, after the manner of factions in a legislative assembly.

On the hypotheses of localization of function and of integrative action we must seek out (1) the afferent paths concerned; (2) the place or places in the central nervous system where these various afferent impulses go before they are finally gathered up and handed over, either singly or in a group, to the motor cells; (3) the motor pathway from its origin in the cortex of the cerebrum to its termination, either directly or indirectly, about the motor cells in the spinal cord, and (4) finally the course of the impulses from the motor cells of the spinal cord out to the various muscles concerned in the reaction. Such a physiology will con-

cern itself far less with the independent action of circumscribed centers than has been the case in the past, but it will, and even now does, give a clearer vision of certain widely distributed integrative mechanisms, and hence of the function of the nervous system as a whole than is possible on the older hypotheses. (Sherrington, "The Reflex Mechanism of the Step," *Brain*, 1911, Vol. 33, p. 1. Wilson and Pike, "The Mechanism of Nystagmus." Transactions, Otological Section, XVIIth International Congress of Medicine, London, 1913.)

EXERCISE AND EDUCATION OF THE NERVOUS SYSTEM

BY

JAMES W. PUTNAM

To present this subject to an audience composed of fellow workers is an inspiring occasion. We are co-workers. We are given a plastic material and are striving to mold that material so that it is capable of realizing its highest efficiency.

For our purposes mind and body are one. Nervous tissue and muscle are different parts of the same machine. The nervous tissue, as represented in the brain, has as its functions:

First, the receiving of impressions from its environment. This it does through the special senses—smell, sight, taste, hearing and touch.

Second, these sense impressions are through some mysterious modification of the nerve cells transformed into motor energy. If it were not so, if nothing resulted from sense impressions then they would be of no avail. If nothing resulted from them it would be the same as if they had never been.

The infant, before its arrival into the world, has as yet received no sense impressions, has had no motor training, but its mental life, its motor life begins at once, as the result of the stream of sense impressions which begin to pour in from every part of the sensitive peripheral area. The first movement of the infant, of flexion and extension of its legs, its wiggling and kicking are all unconsciously of course being received by the brain and modifying the cells in the motor area of the brain. After these apparently purposeless movements have been often repeated, the nervous system has been trained by frequent sense impression to coördinate and control muscle movements until they become under the control of the will. At first the movements are awkward, then with repetition become more sure. They are observed to be more easily performed and to assume the character which we call automatic. Now these special movements no longer require that fixed attention which was at first necessary for their performance. The child's brain has become modified through movements, muscle memories have been stored up and the creeping and walking and holding things in its hands which were at first so painstaking and were so distinctly a brain or mental effort are now apparently done easily.

This is a distinct gain as the brain is now free to undertake more complicated movements. As the years pass on we delegate more and

more muscular movements to the realm of automatism, and the mind is thus more and more freed to work out new combinations and devote its energies to higher work, the work we call intellectual. This power of performing movements automatically is the direct consequence of a law of nervous tissue.

Nervous tissue is capable of being exercised. If a given exercise is frequently repeated we translate that statement by saying that certain nerve cells have been trained to work together in harmony in the same way. These impressions are so lasting that if they are frequently repeated, they will remain even though not called into action for many years. For example, many of us have with difficulty in years gone by, learned to ride a bicycle. We took a long time, some of us, in quickly reacting to the sense of a loss of equilibrium. Until we had learned to react quickly, to relax some muscles and contract others reflexly, we would fall. Then, in some unexplained way the nerve cell associations were made. The nervous system was trained. We could ride. The combination is never lost. The act of maintaining the equilibrium is relegated to the spinal cord, the attention of the mind is released. The awkward painstaking brain control is relaxed. The perfect automatism is established. The brain is free to act in other directions, language, composition, while the spinal cord is carrying on the muscular automatic action. Years may pass without mounting the wheel but the habit of reacting to the stimulus of change of equilibrium is not lost. The same is true of swimming, skating and other complicated muscle combinations. The passing from the stage of voluntary muscular effort to automatic perfect muscular control marks an increase in man's power. The first is difficult and fatiguing; the second is easy and less fatiguing. The education of the nervous system then has a direct result, the establishing of permanent cell combinations. From infancy on, the combinations become more and more complex.

In the brain the cells are so numerous that it is impossible for us to conceive that they can ever all be used or that the possible combination can ever all be made by any one individual. It is like assuming that any one individual can ever make all possible word combinations or that any individual ever makes all possible muscle combinations. Surely none of us use the motor reactions in the muscles of our hands that Paderewski does, yet, he cannot make the combinations with his hands that Houdin did when he could keep four balls in the air at once and read a book at the same time. This required a sense of tactile impression, swift and correct motor response which do this work without visual aid. And so I could go on with illustrations of the marvelous combinations of motor reaction possible in different degree to us all, none of us ever being able to make more than a small part of that which can be made.

It is this fact that is of such great use to the physician when he is called to face the treatment of some of the diseases affecting motion. Now, I am not going to try to make doctors of you nor try to give a clinic, but I wish to illustrate the value of training the nervous system by exercise, by calling your attention to the treatment of locomotor ataxia. In this disease muscle power is present, muscle coördination is interfered with because of disease in the sensory tracts of the spinal cord. This disease interferes with the receiving sense impression by the brain.

Now, through the genius of Fraenkel of Germany use is made of the fact that all nerve cell combinations have not been made by the individual, and a system of education of the brain centers to new combinations is begun. The treatment is based upon repeated exercises made with great attention. The exercises at first are simple and made to command. They are repeated day after day, new movements being added until the result is obtained of re-establishing muscular control by a re-education of the nervous system.

I have seen patients who were unable to walk without the help of two canes develop such muscular control by systematized, often-repeated exercises, as to walk without a cane and without impressing the ordinary observer as having a disease. The nervous tissue for its health demands exercise as much as any other tissue. Exercise, however, must be of a character which calls for mental control. Exercise must be of a quality that requires a mental effort in overcoming difficulties. Exercise must result in achievement. Exercise which is nothing more than mechanical contraction and relaxation of muscle without definite purpose fails to exhilarate and quickly causes fatigue.

This is well illustrated in the story of the man who was given the task of throwing a pile of stones over a wall into the next lot. This he did easily and felt that something that was useful was being accomplished. When on the following day he applied for work he was told to throw the stones back into the first lot and found the job difficult and fatiguing because there was no use in it. The mind received no stimulus from interest or from the sense of achievement.

To this audience it is unnecessary to dwell upon the effects of exercise upon the circulation. I only mention it as a quickened circulation is as imperative a need to the brain as it is to all other parts of the body. It is imperative for the proper nutrition of the cells—for their proper activity. The reports of the schools for the training of the feeble minded are full of records of the beneficial effects of exercise on this class in relieving the incoördination, chorea and general stupidity and lack of initiative. In the feeble minded we note a shuffling gait. This is overcome by running and walking contests. The intellectual uplift of these imbeciles has been marked by the use of drills out of doors, by

simple gymnasium work. Self-control and obedience are taught in no better way than by team work and games.

If we teach self-control, obedience and self-confidence we have done much in character building, by properly directed and controlled exercise. This is not theoretical praising of exercise. It is a simple statement of the truth as observed all over the world. In actual practice of the mental depressions. I have observed time and time again the beneficial effect, not of exercise but of new exercise. I can not emphasize too strongly the value of that word "new" for the carrying out of all well learned automatic muscular work is not what we are now seeking. Automatic work, as I said before, leaves the brain free to do other things, and in these cases the other things mean pernicious self-control morbid thoughts. We want then to find for these people exercise that requires close mental application and gives the brain cells continually new combinations, new associations.

I am going to give you two illustrative cases to show you the curative effects of exercise in mental depression.

First. A man—office worker—who came to me greatly depressed from a sudden shock received on coming home from work and finding his wife had suddenly died a half hour before. There came to him not only the sudden grief and sense of loss but he was mentally overwhelmed by the new sense of responsibility toward the young children. His whole previous scheme of life was suddenly and forever changed and he did not feel equal to it. By day and night his mind was busy trying to answer the questions: What shall I do? How can I meet it? The problem presented to me was how to help this man make the necessary new combinations. Manifestly to set him voluntarily to make new simple physical problems and solve them. I set about changing his physical habits, intending thereby to change the mental current. I had him set out a garden and do a little work in it before breakfast. I had him leave his office at 4 and started him to take cross country walks. He would take a trolley to the city limits, put some food in his pocket and then, properly shod for such work, find his home across fields and along towpaths, along the shores of Ellicott creek. At first he did this work feebly as one stunned. Later he began to take pride in his hardening muscles. He began to observe the varieties of birds, the splendid size of noble trees. He became interested in the flood of new sensations that poured in on his consciousness through all his sense avenues. With this increase of enthusiasm he persuaded his friends to join him in his tramps. He developed a new masterful intellectual life, a new helpful, able physical organization, able to meet his

new world, able to solve his new problems. His fears of insanity were banished.

The Second Case. An unmarried woman of 34 with only the ordinary responsibilities of home life, with no need for worry about financial matters began gradually to lose interest in her home duties, to have a disinclination to meet her friends, no longer to find pleasure in her books or her music. She found her intellectual processes gradually becoming more and more circumscribed, more and more she would find herself thinking over imagined slights given her by her friends. She came to the conclusion that life was not worth living. In conversation with her I found there was nothing of her old life that now interested her. The problem was to arouse a new interest. Her agreement to carry out orders was first obtained. She was instructed in the science of the effect upon the mind of difficult exercises carefully worked out. She was placed in the hands of a competent medical gymnast. She was given progressive work in the gymnasium, all the varieties of movements of balance, stall bar work. Her interest was vigorously diverted from her mental symptoms. She became conscious of the joy of achievement. She was mentally awakened, and at the end of two months she confessed to me that she had not felt so buoyant in years. She took up her home duties with pleasure, commenced her social life in a normal way, lost her suspiciousness of her friends. Her mental activity became such that she took up her neglected music and reading not as a duty but for the love of it. The medical gymnast or trainer who gave her a most careful course reported to me that at first she did her work merely because she had to, in a dogged determined manner, but that soon she became mentally exhilarated by her sense of achievement.

I give all the credit of this cure to the effects of a scientific physical course of training upon the brain cells. These are not isolated cases detailed to you as something wonderful. They are typical cases, chosen to illustrate the intimate relation of mental health of nervous system health to physical exercise which is wisely directed. My emphasis on wisely directed, cannot be too great, for in neither case would we have achieved these results had the orders been: Take a walk before breakfast, use the Whitely exercise twenty minutes, twice a day, or use the dumb bells every morning or swing Indian clubs. Such orders would have been carried out, would have been largely automatic, would have helped some for a while, would soon have become distasteful and then abandoned.

You who have these cases to deal with must for yourselves discover the necessity of progress in achievement and avoidance of automatism in this kind of exercise.

The Rule. The interest must be continuous and not allowed to flag, must always be borne in mind. Automatism has its very useful place. It saves much wear and tear in the regular every day necessary muscle work. Think for a moment how mentally fatiguing it would be if we had to think how to use our muscles in the simple acts of dressing, feeding ourselves, writing, walking and the other thousand and one acts of daily automatic life. If we had to give the mental attention to those muscular movements we would have little energy for the higher intellectual functions.

Another point to bear in mind, that it is the strong muscles that most easily obey the will. The weak muscles are the most rebellious. It takes a greater mental effort to coördinate weak muscles than strong muscles. This is simply another argument in favor of maintaining muscles at their normal strength.

As civilization gradually removes from us the necessity of great muscular effort for the maintenance of life, it becomes more and more necessary that we train up a great body of men and women such as are found here to-day, to devote themselves to the upbuilding of the body. These teachers must not merely know how to do this work but why they do it. It is necessary in order that you be successful and get great results that you carry with you the enthusiasm of belief that you have the fervor that makes you not only teachers but preachers of the truth of the healthy mind in the healthy body. It will not do for you to merely teach those in your charge. You must have the missionary zeal that compels you to make converts. In no other way can we overcome the degenerating effects of urban life.

We must not be deceived into thinking that this is a need of the so-called leisure classes. It is a need of those who do daily automatic work at machines, in factories. It is the need of those workers with narrow intellectual life. Such men as Gulick have done much to arouse men to the necessity of providing active outdoor games for children and a place for them in all our large cities. In no other way can we stem the tide of degeneracy which we all feel is imperiling our physical intellectual and moral life. Our schools, academies and colleges have all awakened to this. But these care for only a small per cent. of the population.

I should never have been willing to address you to-day had I felt that my message was to be simply one of expounding scientific theories as to the relation of the nervous system to exercise. That would have been a waste of your time, for you all know it and believe in it. You all know the Greeks taught it and brought about that wonderful perfection of body, joined to high intellectual power.

FRAGMENTARY NOTES ON HOW TO PRESERVE AND INCREASE THE PHYSICAL, MENTAL AND MORAL VIGOR OF OUR SCHOOL CHILDREN

BY

S. ADOLPHUS KNOFF

1. To preserve the mental and physical vigor of our school children, we must begin to work with the preceding generations, with prospective fathers and mothers, continuing while the child is still in utero, and of course also during infancy and the preschool age.

2. We must teach parents that quality is better than quantity, and that a large number of children underfed and of mental and physical inferiority is race suicide, while the reverse is race preservation.

3. There must be the heartiest coöperation between city council, school boards, school architects, school superintendents, teachers, and parents.

4. The site for a school building should be ideal; on elevated ground, and as far as possible removed from traffic, dust, and noise. The building should be safe, sanitary, well lighted, with good acoustics, and attractive outside as well as inside. Its interior decoration should be educational, aesthetic, and inspiring.

5. The janitor of a public, parochial, or private school should be a practical sanitarian. Daily cleansing or disinfection of classrooms, when necessary, should be obligatory.

6. The toilet and washing facilities for children should be sanitarily perfect.

7. The rural schools, be they for white or colored children, should not be less sanitary, less well equipped or less well managed than the best public school of a city.

8. The more open air schools we can have, the more outdoor instruction in kindergarten, public schools, and in colleges, the greater will be the physical vigor and strength of the pupils.

9. If we wish effectually to prevent and stamp out tuberculosis in

children, the open air school must become the rule, the indoor classroom the exception.

10. If there is not ample room for playgrounds and separate open air classes, the school house should have a garden, playground, recreation room, and some open air classes on the roof.

11. Let us send the child to the open air or fresh air school before its tonsils or adenoids are enlarged as a result of over-work indoors and of fighting off dust and infection.

12. If the interior classroom must be used, the temperature and moisture should be properly regulated with the aid of the thermometer and the hygrometer and the air kept in motion with the aid of a fan. These three devices should be as essential to the equipment of an indoor classroom as is the blackboard.

13. Practical breathing exercises, judiciously taught, should form a part of the daily curriculum.

14. Outdoor singing, outdoor recitation, the training of the voice to speak and intonate properly, botanical and geological excursions, visits to zoological gardens and aquariums, and practical lessons in horticulture or in farming, should be introduced as often as the curriculum will permit.

15. Inculcate the love for open air life into the child at school and it will become a fresh air apostle at home.

16. If desirable, let the child between 4 and 6 attend a kindergarten; but between the ages of 6 and 8 let it attend a play-school devoted principally to physical and moral development.

17. For the average child the age of 8 is ample time to enter a public school. The child will be better equipped mentally and physically at that age to stand the strain of continued school life than had it been sent at the age of 6.

18. So long as we permit child labor in factory, workshop, cannery, field, mine, or at home, so long will we have physically, mentally, and morally defective citizens.

19. No State government of this great Union believing in the equality of men and the principles of the Declaration of Independence upon which this republic is founded, has a right to allow child-labor to exist anywhere within its borders.

20. The well-known methods of daily medical inspection of all school children to exclude those afflicted with acute or chronic infections

and general or local diseases should be supplemented by a thorough physical and mental examination of every pupil by the school physician on admission and by annual or semi-annual re-examinations for tuberculosis, heart disease, insidious nervous afflictions, etc. A careful record of the physical and mental condition of the child should be kept and the result of each physical and mental examination recorded.

21. Teachers and all other school employees who come in close contact with the children should likewise be examined on admission and submit to periodical re-examinations. Every large school should have a trained nurse in attendance during sessions.

22. The kindergarten, play-school, private, and parochial schools and evening classes should be as carefully watched and supervised as the public day schools.

23. Throughout all the grades from kindergarten to college, pupils should be discouraged from kissing each other, because of the danger of becoming infected with disease through this practice.

24. The tuberculous or predisposed, the mentally defective, delinquent, or backward children should have separate schools, preferably in connection with a sanatorium, or should at least be placed in separate classes or schools located in the most sanitary region of the city.

25. A goodly number of the seemingly delinquent, defective, and backward children are of syphilitic origin, and before classing them permanently with the defectives, a Wassermann test should be applied, and if positive, anti-syphilitic treatment inaugurated.

26. The hopelessly feeble-minded and defective child should be rendered sterile before puberty, or at least permanently segregated.

27. Health lessons and simple instructions in the prevention of disease, such as tuberculosis, for example, can easily be imparted to even the youngest child. The same holds good for many other diseases and can help in the education of parents and children alike.

28. Lessons in mental alertness, in what to do in hours of danger, such as in the event of fire in school or at home or a panic from whatever cause, and instruction in first aid to the injured, are to my mind as essential as any health lessons.

29. Vaccination against smallpox should be a requisite to admission to any school (public, parochial or private), and periodical revaccination, particularly in times of epidemics, obligatory to continued attendance at school.

30. In cases of epidemics of diphtheria preventive injections of antitoxin should be given to all children exposed. When parents object to this procedure their children should be excluded from school until the epidemic has ceased.

31. In cases of typhoid epidemics anti-typhoid vaccination should be urged.

32. Every large community should have a special outdoor or fresh air classroom for children afflicted with whooping cough.

33. All hindrances to the proper physical and mental development of the pupil should be remedied, such as adenoids, enlarged tonsils, polypi, or deviated septum, defective eyesight, hearing, or defective teeth, and orthodontial treatment for the correction of irregular teeth should not be neglected. The same should hold good for the treatment of any remediable unaesthetic appearance in the child.

34. The home environments as well as bad school hygiene are often responsible for the pupil's physical or mental inferiority. Underfeeding, unsanitary sleeping quarters, and child-labor at home, or lack of sleep are often the causes of physical or mental deficiencies.

35. All medical, surgical, and dental treatment should be provided for in such a way as not to pauperize the recipient.

36. Suitable luncheons should be served at cost in properly equipped lunch rooms at the school house. This will help the underfed, the carelessly fed, and the anemic child. Table manners should be taught and helpfulness and democracy inculcated by having the children alternately serve each other.

37. Sanitary fountains furnishing good, cool water should form part of the equipment of every school, and the drinking of plenty of such water should be encouraged.

38. No public school should be considered well equipped without its swimming tank of running water, no curriculum complete without swimming lessons.

39. Field games, gymnastics, calisthenics, aesthetic and graceful dances, and rational athletics should be taught to the boys and girls at school. These exercises will benefit the child's physique and give it a healthy and happy frame of mind.

40. No lesson in public school should be longer than three-quarters of an hour.

41. After each lesson of three-quarters of an hour there should be one-quarter of an hour's recess for the tired pupil to rest, for the ones not tired to exercise if they please.

42. The younger the child, the fewer should be the home lessons; the fewer the home lessons, the better will be the work at school.

43. On excessively hot days there should be no school.

44. To have small classes and enough teachers should be the aim of every school board.

45. The school curriculum should be so arranged that the mental strain shall not react unfavorably on the physical and moral constitution of the child. Lessons requiring mental strain should alternate with manual training, or work in domestic science, play, and rest.

46. Unnecessary and superfluous studies or work which has no bearing on the average career of the future man or woman should be avoided. More attention should be paid to the development of character and the imparting of such general knowledge as will be actually needed in taking up life's work.

47. The teacher should know the value of mental hygiene, should realize that there is as great a danger in teaching too much as there is in teaching too little, and that change of work is often equivalent to rest.

48. The training of boys in handling tools should be encouraged, particularly for those who have a bent for mechanics, and the girls induced to study scientific housekeeping. It will help the pupils physically and morally.

49. The principles underlying the Montessori method are applicable to the higher grades as well as to kindergarten work. Initiative or self-education should be encouraged, not repressed.

50. Individualizing in teaching pupils should be the specialty of the modern teacher. In the praiseworthy endeavors to care for the delinquent and backward child let us not forget the genius and brilliant pupils and not hold them in check so that the backward child can catch up.

51. The trained psychologist should be one of the most important additions to any modern school. His help will be of inestimable value to teachers, parents, and pupils.

52. Instead of final examinations the record of the entire year should determine the promotion into higher grades. Cramming for examination is unhealthy, bad for the mind and body, and immoral.

53. Boys above the age of ten would be better taught by male teachers.

54. Lessons in embryology and biology, leading to the explanation of sex relation and eugenics should be taught according to the age and understanding of the pupils, and in the higher grades preferably by teachers of the same sex as the pupils.

55. Respect for parents, teachers, and elders, and kindness to the sick and unfortunate, to fellow pupils, and also to the animal world, should be inculcated in the minds and hearts of the young at school.

56. True democracy should be taught and practiced in our schools. No secret societies should be tolerated nor snobbishness toward the less fortunate, less brilliant, or socially inferior pupil.

57. History should be taught backward. This method will lead to a better understanding of the principles upon which our republic has been founded.

58. Civic rights and civic righteousness, political purity, and political duties, the meaning of political equality, and the obligations of the citizen toward his family, community, state, and country should be taught in our schools. particularly in the higher grades.

59. The underlying ethics of all religions, worship of God and service to man, should also be taught, but all doctrinal and sectarian differences strictly avoided.

60. To attain the best intellectual, physical, and moral development of our children, we must have the best intellectually, physically, and morally trained teachers.

61. The teacher should no more be overworked than the pupil.

62. The relationship of the teacher to the principals and superintendents should be helpful.

63. Becoming a mother should not permanently disqualify the woman teacher any more than a male teacher is disqualified by becoming a father.

64. The teachers should be given a voice in the government of our schools.

Conclusions. Professor R. W. Corwin, of the University of Colorado, is reported to have made the statement recently that out of 20,000,000 school children attending the public schools, 15,000,000 are in bad health.

Professor Thomas D. Wood, of Columbia University, his co-worker on the report made at the Sixth Congress of the American School Hygiene Association, is more specific in his estimate, asserting that a careful study of statistics and the consideration of all conditions leads him to the following personal conclusions. Agreeing with Dr. Corwin on the approximate number of 20,000,000 pupils, he says:

"From (1.5 to 2 per cent.) 300,000 to 400,000 of these have organic heart disease. Probably (5 per cent.) 1,000,000 at least have now, or have had, tuberculous disease of the lungs. About (5 per cent.) 1,000,000 have spinal curvature, flatfoot, or some other moderate deformity serious enough to interfere to some degree with health. Over (5 per cent.) 1,000,000 have defective hearing. About (25 per cent.) 5,000,000 have defective vision. About (25 per cent.) 5,000,000 are suffering from malnutrition, in many cases due in part at least to one or more of the other defects enumerated. Over (30 per cent.) 6,000,000 have enlarged tonsils, adenoids, or enlarged cervical glands which need attention. Over (50 per cent.) 10,000,000 (in some schools as high as 98 per cent.) have defective teeth which are potentially if not actually detrimental to health. Several millions of these children possess each two or more of the handicapping defects."

Perhaps this estimate is too high and it would seem to me difficult to prove the exact figures. What we know is that a very high percentage of the children attending the public schools, are below par either physically or mentally. But this need not discourage us.

The prognosis of diseases in childhood is, as a rule, more favorable than in adult life. The child's mind as well as the child's character can often be moulded and what seemed abnormal be made normal.

I agree perfectly with Professor Wood when he says that the defects in the 15,000,000 school children at partially or completely remediable. It is my firm belief, however, that it will require not only an entirely different method from the one now in vogue in the majority of schools to deal with physical defects, but also a revolutionizing of our present educational system in general. We must have the best buildings, the best sanitation, the best hygienic supervision, school clinics—medical, surgical, and dental—wherever a large number of pupils warrants or demands the installation of such institutions, the best teachers, the smallest possible number of pupils for each class, and last but not least, the best preventive and curative measures to diminish the number of physically, mentally, and morally inferior children.

I do not stand alone in advocating the need of thoroughly revolutionizing our educational method nor in my views on the need of rebuilding or remodeling most of our schools. Dr. George W. Jacoby, one of the leading American authorities on nervous diseases, in a paper entitled,

"The Montessori Method from a Physician's Viewpoint," says in speaking of mentally inadequate children, "I lay stress upon the fact that apparent inadequacy and inferiority with the consequent incompetency are frequently due not as is so often believed to stupidity and obstinacy but to the fact that the pedagogy which to-day is sovereign in our schools has been unable to find the key to the mental life of these children."

One of the most brilliant women whom it has ever been my privilege to meet, a school teacher of many years experience and still acting as a superintendent, also an admirer of Dottore Montessori's views regarding the encouraging of the initiative of the child in kindergarten and school, recently wrote me as follows: "It is hoped that the people in charge of the Department of Education may be familiarized with your motto, 'The open air school must become the rule, the indoor school the exception.' In a few generations, if not sooner, we shall be looked upon as barbarians because of the unnatural conditions, physical and mental, under which we conduct the system of repression which we dignify with the name of education." I do not take quite so pessimistic a view as to think that it should take generations to bring about this betterment of conditions. I hope and pray, nay, I feel sure that it will be done and will be done soon.

The task is not so difficult as it seems, but for its accomplishment we need the united efforts of a wise government, school boards loyal to the highest ideal, well trained teachers, intelligent parents, a medical profession ever ready to coöperate with the teacher in the interest of the child, and philanthropists with and without means who are willing to devote some of their fortune to this cause, or give their personal service to the betterment of conditions which now surround the pupils in our public schools.

In his remarkable address at the opening of the Fourth International Congress on School Hygiene, Professor John Huston Finley, the former president of the College of the City of New York, now the Commissioner of Education of the State, has very aptly characterized this work as "the conservation of human power." Is there anything in this world of ours more important than that? The child of to-day is the man of to-morrow, the better the physical, mental, and moral status of the child, the nearer will we approach the ideal, and men and women will become indeed the image of their Creator.

HYGIENE OF THE EPILEPTIC SCHOOL CHILD

BY

WILLIAM T. SHANAHAN*

Epilepsy is a disorder which ordinarily only presents to the minds of the average individual a condition constituted of convulsive attacks, either severe or mild in nature, and not as one having as one of its principal symptoms a more or less marked involvement of the mental state, which unfortunately in a great majority of instances is deteriorating in nature, reaching in no inconsiderable percentage a final state of exceedingly marked mental deficiency.

As most of you are no doubt aware, epilepsy is a disorder of early life, the symptoms appearing in over 80% of all cases previous to 20 years of age, thus afflicting the unfortunate individual during the period of growth and development.

It has long been known that hereditary influences, acting either directly or indirectly, were active in the production of most epilepsies. Careful studies made in connection with the question of the role of heredity in epileptics have shown that, conservatively speaking, from 60% to 80% of all epileptics have in their family a taint indicating that in those families there was present a nervous system below the normal in its general makeup and functioning power. In some members of these families this shows itself by the presence of certain types of insanity, while in others alcoholism, criminalistic tendencies, sexual immorality, vagrancy and the like are observed. In children belonging to such families there is needed but very little in the way of injurious influences to so effect the central nervous system as to have appear the symptoms of epilepsy with its accompanying mental involvement. What in the ordinary healthy child might be a simple passing illness from which the child would make a perfect recovery would in the predisposed child serve to act as an exciting cause to bring forth the epileptic seizures.

In 10% of the epileptics there has occurred during birth, or directly after birth, an injury to the brain as the result of hemorrhage. In consequence of this there is a destruction of more or less of the essential brain substance, resulting in a permanent paralysis usually of one-half of the body and occasionally more extensive. In this class of paralytics there will appear later, in the majority, seizures of various kinds, and a more or less marked mental deficiency.

During infancy and childhood, as the sequel to, or coincident with, severe digestive disorders and likewise with some of the various infec-

*Read by Dr. G. Kirby Collier.

tious diseases of childhood, such as measles, whooping cough, scarlet fever, etc., there may occur an inflammatory process involving the meninges, the membranes covering the brain, and may involve even the brain itself, destroying the essential nerve cells, producing scar tissue, which will later act as an irritant to the delicate nervous system, or in many instances produce both of these changes and as a result a mental defect and seizures sooner or later present themselves. The unfortunate child may also receive from a blow or fall some serious injury to the brain, causing a destruction beyond repair of important structures so that later the phenomena of epilepsy are observed.

I would like to call your attention to the fact, however, that many of the falls and alleged injuries are simply coincidental and not causative in nature.

The various symptoms of epilepsy, or more strictly speaking the epilepsies are only recognized fully by those who have had a considerable experience with this class of unfortunates.

To those who are engaged in giving instruction to children, the mental state is the one which naturally is of primary importance when considering these children. There is, as has been already mentioned, a permanent mental impairment in the great majority of epileptics; and in addition to this, one will observe from time to time recurring more or less frequently, depending on the individual case, a marked fluctuation of the mental activities, often to such an extent as to interfere materially with their school work. Periods of irascibility, of apparent resistance to study and to the acceptance of instruction, quarreling with schoolmates and not infrequently active delusions, hallucinations and illusions, relating perhaps to the teacher and other pupils in the immediate environment of the individual are observed. Naturally with such a decidedly unstable mentality, the teacher must be constantly on the lookout to steer around the various obstacles, thus presented in the problem of teaching the epileptic child.

A teacher of experience with these children will, after a time, become sufficiently familiar with the various symptoms of the disorder as to be able to recognize at once in many instances the early indications of the approach of one of these periods of acute mental change and thus avoid many difficulties which to the inexperienced would involve not only much loss of time and energy in giving instruction which could not possibly be grasped, but also prevent much unpleasantness and disturbance arising in the school room.

So far as the chronic and pronounced mental failure is concerned, teachers of experience can readily gauge the limitation of the individual child and not attempt to accomplish the impossible, *e. g.*, by trying to teach to an imbecilic child whose mental state has stopped developing

at the level of a child of six years, subjects which are taught to a child several years older. Proper use of the Binet and other mental tests will assist very much in ascertaining as to the degree of mental retardation or enfeeblement.

As the result of many years of experience in the treatment of epileptic children in the various special institutions in the many parts of the civilized world there is a consensus of opinion that more stress should be laid on the manual side of training, rather than ordinary scholastic work, although the latter is not to be ignored and in many special cases is in fact to be carried on very much the same as in the normal children.

Of the utmost value in gaining the interest of the unfortunate epileptic children, who in consequence of their disorder have been deprived of school education, is manual work which tends to bring them out of themselves and expose to light many qualities which no one had realized were present in them.

By work in the school garden, preceded by explanatory lantern slide pictures and demonstrations with later the actual work in the garden there is aroused in these children a spirit of competition, responsibility and earnestness to accomplish something, the result of which can be actually demonstrated without difficulty. In the manual work and gymnastics the epileptic can accomplish anything that can be accomplished by the ordinary child, making due allowance of course for the occurrence of seizures and the actual state of the mental processes as to deterioration.

The average epileptic child is ordinarily fairly adept at weaving, clay modeling, working in pottery, iron work, bookbinding, Sloyd work, leather work, work with raffia, lace making, basketry, making of palmetto hats, printing, embroidery, etc., etc. Many epileptics do well in music, to such an extent in fact that good bands are organized in special institutions.

In the school work done by the epileptics at Craig Colony, it has been found that no inconsiderable number of these patients have done exceedingly well in the ordinary scholastic branches so that they could in fact well hold their own in a comparison made with pupils not thus afflicted.

It has long been my impression that in schools other than those located in special institutions, there must be many epileptic children having seizures at infrequent intervals who can and do progress satisfactorily in the regular school work of the particular grade in which they happen to be.

In the matter of reading, many epileptics are handicapped owing to the existence of what is termed plateau-speech as the result of which

the normal inflection is absent, or markedly impaired. These symptoms so effect some epileptic children that reading done by them is very monotonous in character.

Some of the teachers who have been engaged in school work at the Craig Colony have given me the impressions which they have gained as the result of their work and these I will briefly summarize: First, the teacher who has been working with epileptics for some dozen years states that when she first started the work she did not know how the epileptic school child differed from the normal school child and so began her work with the epileptic school children as though they were of a normal makeup. She began her work under the impression that epileptic children are able and anxious to learn. She soon observed that many of them, especially those coming from the larger cities had, in consequence of their affliction, been closely confined to their homes and in consequence had been materially stunted by such a narrow environment. Their knowledge of ordinary general information was exceedingly limited. The facts known to the normal child of their age were entirely absent. It was at once evident that because of this state of affairs, giving of instruction pertaining to new facts could not be associated with any previous knowledge gained by observation by the particular child, hence it was more difficult to fix in the memory of the child the new facts which she was endeavoring to teach. She soon learned, however, that with sufficient tact and persistence, the memory could be so drilled that it was much strengthened and the knowledge which she was endeavoring to instill could be retained. This particular teacher states that the ordinary school branches, reading, writing, arithmetic, spelling, etc., are as readily mastered by the average epileptic child as by the ordinary normal school child.

Of the several hundred epileptic school children which this teacher has observed she states that perhaps 20% are deficient in their ability to grasp arithmetic, this difficulty being seemingly due to an impossibility on their part to be able to use figures as does the ordinary child. In such cases after persistent drilling and the use of various devices toward the bringing about of the knowledge of numbers, she states that these are unsuccessful in developing what might be looked for, a latent power of grasping the subject in hand.

It must be realized by teachers in instructing the mentally defective, especially the epileptic, that as a rule the amount of time spent daily in school work by such children must be less than that required of normal children. In our experience at the Colony it has been found that from $1\frac{1}{2}$ to 2 hours is the amount of time ordinarily spent. In selected cases, however, there is no doubt but what such children would be able to spend four or five hours in school with much profit. In fact,

they could make good progress or the same progress as the average normal school child.

To those working among epileptic school children it has been found that the question of discipline is not as difficult as many would try to have one believe. Those who tend to be difficult upon a fair trial to make amenable to discipline are the exception and not the rule. The average school child becomes very much interested in his or her work and is pleased apparently to be placed under a kind control and gives evidence of pride as relates to the school work. There seems to be no question but what most of the difficulties which have been complained of in regard to the instruction of epileptic children are the result of neglect or, as one teacher expresses it, of over indulgence. The teacher should be firm and strict in the use of her discipline but not harsh or overbearing, any more than with the normal child. To a teacher who lacks tact and power to persistently and constantly carry on her work along lines of least resistance as indicated in the individual child there is danger of her being over indulgent with the epileptic child or being unkind in her attitude toward the afflicted one.

I have been told by a teacher of considerable experience with these defectives that it is much more difficult to overcome the mental habits of an epileptic child who has been over indulged than it is to teach one who has simply been neglected.

A boy 15 years of age, suffering from infantile paralysis, involving one-half of his body, had been the victim of circumstances which existed from the boy being also subjected to epileptic seizures that prevented him from receiving instruction. During his first year in school little progress was noted, but during the beginning of the second year he asked his teacher if he might try and read a page on the chart, which request was granted and he was soon able to read fairly well in the First Reader. If the teacher of the epileptic child will be patient, tactful, persistent and intelligent in her efforts there will seldom be presented an epileptic child, unless one who is absolutely defective mentally, who cannot make some progress in school work and as already mentioned, in many instances quite satisfactory advancement.

In a recent spelling match held at the Colony between the boys and the girls, it was of interest to note the manner in which these children participated in the contest. They displayed as much, if not more, interest than would be displayed by children of normal mentality and were able, on the whole, to render results quite comparable with those expected from the normal child. The writing done by many of these epileptic children when they have the opportunity to gain some experience is just as good as that seen in the ordinary school room.

The fact which cannot be too strongly impressed upon those having

these children under their care is that hand in hand with the school work should go the care and supervision of a competent physician to regulate the living conditions of the child. There must be outlined a careful hygienic mode of life to be consistently adhered to so that the child may approach as nearly as possible the normal physical condition, thus enabling him to resist to a marked extent often times the effect of certain deleterious influences acting upon his physical makeup. This careful supervision can naturally better be given in a special institution where the child is under observation during the entire 24 hours, than can be given in the ordinary home.

In summarizing the results of school work with epileptic children, the fact should be borne in mind that when an epileptic child has a seizure there is, as a rule, a marked interference with his mental processes, so that it is difficult or impossible for him at such periods to acquire knowledge. Furthermore, the knowledge acquired a short time previous to the occurrence of a seizure or series of seizures may be entirely blotted out, necessitating the teacher's repeating the instruction given during this entire period.

Ordinarily, however, excluding the occurrence of seizures and giving due weight to the presence of a mental defect the work of instructing epileptic children is much more encouraging as to its results than is often thought for.

I do not wish to go on record as claiming that the average epileptic child may be brought into school work and results obtained which compare absolutely with those of a normal child, but I do maintain that a large percentage of epileptic children carefully selected and under proper conditions can do quite satisfactory school work in the lower scholastic branches, and in most of the manual branches and that a comparatively small percentage of epileptics can carry on advanced school work to a very satisfactory degree. From time to time I have seen epileptics well advanced in years who have had their disorder since early childhood and who nevertheless had acquired a University Degree, standing well in their classes during their college work.

I wish to reiterate that the work in the manual branches should receive more attention in proportion than should the ordinary scholastic work, with due allowance for the acquiring of the ability to read and write and carry on simple calculations. While persistence, optimism and tact in the efforts of the teacher should be ever in mind in carrying on school work with any class of children, they are especially necessary in conducting work among those who are afflicted with epilepsy, and as a consequence have a retardation of their mental activities and a narrowing of their psychic sphere.

THE PRESENT ATTITUDE OF THE BUREAU OF CHILD HYGIENE OF THE CITY OF BUFFALO TOWARD THE DEFECTIVE CHILD

BY

FRANKLIN W. BARROWS

Our Bureau of Child Hygiene, which is under the immediate direction of the Assistant Health Commissioner, comprises the divisions of Infant Welfare, Midwifery, Children's Institutions, Medical School Inspection and Publicity.

Through medical inspection of the schools the doctors and nurses of this Division are brought into close relations with the defective children of school age and have many opportunities to study them and to be of service to them in various ways.

Right here it is gratifying to say that the Department of Education and the Department of Health are on the most cordial terms at every point of contact. Teachers and medical inspectors work together in the interests of the children, and when, as rarely occurs, there is any lapse of harmony between them it is due merely to a lack of mutual understanding—a condition that never fails to clear up. The question so sharply debated in many cities, whether medical school inspection should be controlled by the health authorities or the school authorities, has never reached an acute stage in our city because we were all too busy with our own work to quarrel over the directorship. This is true of our numerous parochial and private schools as well as of our public schools. It applies also to the Juvenile Court. Medical inspection is carried on by our Bureau in the Juvenile Detention Home, where every child receives practically the same physical examination that is given to school children and a considerable portion of the inmates are subjected to psychological tests at the request of the Court. Our medical inspectors cannot complain of any lack of opportunity anywhere in our city. The only difficulty is that more work comes to us than our force is able to undertake, and we are compelled to increase our facilities in order to satisfy our allies in the schools and court.

Naturally, with so many friends finding work for us to do we are committed to a policy of expansion. We hope that our next advance in this direction will be a considerable increase in the number of our school nurses, which will surely result in vastly multiplying our present services to the children of Buffalo.

We are to consider for a few minutes one particular phase of medical inspection in our schools and courts, namely, our work for the defective child.

As a body of physicians and nurses we are convinced that, next to the suppression of contagious diseases, our most essential work is the careful physical examination of every defective child. We propose to study first those children whose defects are most glaring, to the end that they may receive prompt recognition and that steps may be taken at once for their relief by appropriate means, hygienic, medical, and, if necessary, surgical. The routine examination of children room by room, or grade by grade, is not to be thought of until after the teachers and inspectors, working together, have singled out from the school all children who seem to be in urgent need of attention, and have decided what to recommend in each and every case. After that is accomplished, toward the middle or end of the term the remaining children can be examined in order to detect wrong conditions which have so far been unnoticed.

It is not necessary in this place to recount the various physical defects which every inspector observes in his day's work, nor to dwell on the necessity of persistently following up his recommendations—a service which the school nurse is splendidly fitted to perform. It is not necessary to tell you that many a dull and listless child becomes bright and alert when he is relieved of the physical handicap that has been holding him back. These statements are mere truisms to-day, demonstrated in every school where efficient medical inspection exists, and accepted by every person of intelligence.

We are confronted, however, with another problem, vastly different and more difficult to manage—the child whose dullness and lack of ability depends primarily on a deficiency or defect of mental power. This child may or may not have all the advantages of medical and surgical treatment, but he still remains a simple child, younger in mentality than in his actual years of life. We can generally succeed in helping the physically defective child. What can we do for the mentally defective?

One thing is certain: the mental defective will never come to his own until all the forces of society, school, clinic, church, court and the family circle join in the effort to give him a chance—not simply a fair chance but the best chance in the world—a chance not merely to live but to develop his potentiality in fullest measure.

It is easy to pity the defective child, and this makes it easy to pet him and humor him as a sort of compensation for his unfortunate plight. But it is not so easy for us to recognize that there is some salvage in him and that it is our business to stand by him while he works out his salvation. Neither is it easy for us to grasp the fact that the mental defectives

are not simply the children of adversity but in a more terrible sense the fathers and mothers of adversity, unless we extend our hands to protect them from their own passions and to save ourselves from the foul brood that they are bringing into the world.

In dealing with the mental defectives society has shown more sentiment and less sense than toward any other dangerous element in our communities. We do not wish to crush out sentiment but we do wish to guide it into right lines of action by a strong infusion of common sense—the same sort of sense that we use in dealing with the sick or the insane.

There is too much sensitiveness to-day concerning the propriety of calling a spade a spade. We are afraid to speak that dreadful word *imbecile* and we are on doubtful ground when we talk of the feeble-minded or the mentally defective, because we fear to offend the family pride of parents and relatives, some of whom, by the way, may be tainted by the same defects that we have discovered in their children. We have cunningly devised terms coined for the especial purpose of concealing our thoughts and these are the euphemisms that we use in public—in the school and on the lecture platform—when dealing with these delicate subjects. Put your imbeciles and morons and epileptics into groups by themselves but call them “ungraded pupils” or “special classes.” Admit if you must that some of them have fainting spells but never accuse them of “throwing a fit” or all your good work will be undone.

Now there surely comes a time in the history of every case when all the ingenuity that we once employed to conceal its actual condition will have to be turned to the better use of revealing the naked truth to parents and guardians. If the child in question is really feeble-minded we have to disabuse its friends at last of the idea that their charge will ever become a bright light in the world; we may have to say that the child will require careful, watchful supervision throughout life. Then why not deal with this whole matter more frankly from the start? Why not tell the public that there are children feeble in mind just as there are children feeble in body and that it is quite as necessary to institute special measures for the relief of one as of the other; that as one child inherits or acquires defective lungs or kidneys another child inherits or acquires defective mentality. The truth may have a harsh sound but it is only the truth that will make us free from this growing evil. To quote from the last Annual Report of the Bureau of Child Hygiene: “All considerations of public safety and common decency demand that we should recognize the mentally defective child before he has developed his evil potentialities, protect him from his own follies and surround him with all the safeguards necessary to insure a harmless and happy existence. In the persistent following up of this policy we

are protecting ourselves and our descendants even more than the mental defective." * * * "If we but look squarely at the facts we must admit that all human infants are idiots at birth—blind, deaf and dumb and totally dependent on others for the regulation of their functions. Fortunately, most of them are born with a capacity for development. A few, however, in every community, lacking this endowment, remain in a state of profound idiocy all their lives; others emerge partially from the state of normal infancy and never develop beyond the stage of the three-year-old, or five-year-old, or ten-year-old. The moron is capable by proper education of reaching the stage of the normal twelve-year-old child—and no more. A true interest in our children should lead us to admit the existence of an arrested mind as freely as we would admit the existence of any visible deformity of the body, to the end that proper measures should be taken in early childhood to train and develop the mind to the best advantage of the child. To deny the fact or to 'shield' the child from proper investigation deprives him of the little good that he might receive from intelligent care and nurture. While this is true of the lowest grade of feeble-mindedness it applies more emphatically to the moron and to the border-line cases in whom there is more salvage—a chance to attain comparative independence and usefulness under the most favorable conditions that can be afforded by our modern methods of training. The Department of Public Instruction has expressed its readiness to give a special opportunity to our feeble-minded children as fast as they are discovered and organized into classes. Many children have been greatly benefited by the special classes now conducted under the supervision of the public schools, as the records of these classes abundantly prove.

"Surely there is every reason for us to bring these cases into the light and to give them the benefit of all the influences that can raise them to a higher degree of self-help and efficiency."

We believe that the public is entitled to know these things and we would exhort all people to consider seriously the fact that the feeble-minded child is a menace to public health and public morals. He is usually subnormal physically as well as mentally and for this reason more liable to disease, including the various contagions, than the normal child. He is the very stuff of which a large proportion of our derelicts and criminals are made. And yet, notwithstanding these gloomy facts, we would have the people know that the lowest defectives are improvable in some degree while the very best will never be actually *cured* by all of our efforts in their behalf.

Some of our friends will exclaim in the language of Job: "Who is this that darkeneth counsel by words without knowledge?" We would reply that these words are backed up by every truth that our latest

experts have discovered. These words if proclaimed often enough will throw a flood of light upon the problem of mental defect and make all our subsequent work easier and more productive.

It will be the policy of this Bureau, therefore, to work without disguising our belief or intentions. As health officers we have no more right to ignore the mental defective than the typhoid carrier or the peddler of dirty milk. It is our business to diagnose mental defect just as we diagnose typhoid, syphilis, diphtheria, or rabies on the request of any member of the Commonwealth. It is our duty to point out the necessity of quarantining certain defectives just as we should quarantine any other person who is liable to poison or contaminate society by his presence.

With these ends in view our line of work will follow some such course as this:

1. To find all the feeble-minded children in our city and place their names and residences on record. We do not know how soon we may have the aid of New York State in this work.

2. To examine them as fast as possible and to diagnose their physical and mental defects. In this work we have the assistance of a large consulting staff of specialists in various lines.

3. To recommend proper procedures for the relief and correction of physical defects, and to follow up these recommendations by earnest efforts in behalf of the child.

4. To make careful psychological studies of those cases who are puzzling the schools and the Juvenile Court, and to aid in solving the problem of their proper care.

5. To assist the Department of Education in selecting and grading pupils for their special classes and to observe from time to time their progress in these classes.

6. To insist on the necessity of custodial care for all cases that are potentially dangerous to society, and to build up the faith of the people in our custodial institutions.

7. To endeavor to prove to our City that prevention of feeble-mindedness is possible while cure is impossible, and to urge as a matter of economy a more sane and humane policy in dealing with the hundreds of feeble-minded children who are with us to-day.

PREVENTION OF NERVOUSNESS AMONG SCHOOL CHILDREN

BY

SIMON R. KLEIN

To be short with my ideas and proposals, to prevent the seemingly incurable nervousness of school children, I would suggest it to the authorities that they should abandon the present system they are conducting, especially in New York City. I had the chance to meet so many foolish spectacles in public schools, since my own children are pupils there.

I did meet, through my children, 200 or more school children of different kinds. Epigones of poor, rich and millionaire parents, who are sending their offsprings to public schools, and I found that out of 200 maybe 190 were nervous; some of them in bad condition. Their spirit is high, but memory poor; their attendance satisfactory, but progress *not* sufficient.

(a) The teaching system is in a "hurry." Three to four months after the child entered the Class I-A he is required to know the alphabet perfectly, if not, the child can *not* be promoted. Everything, everybody is in a "hurry"—in America. When I was a schoolboy in Austria some 30-35 years ago, the teachers gave us *two years'* chance to learn the A, B, C. The American child is nervous from the beginning. I saw in many cases where their hands were trembling while writing.

(b) Another way of prevention would be to let the children play on the grounds *at least 2 hours* during the day. So far as I am informed they play a half hour only before and 15 minutes after noon during school hours, and even then the little ones can play *only* in the basement of the school.

(c) The children are given opportunity day after day to drink beer, wine, whiskey. Hardly could be found a family where, after return of the father from his daily work, couldn't be found three or four pints of beer on the table at supper time. Children *under* 10 years of age get—I saw it myself—two or three glasses of it. Consider, please, that sort of education, where children under 10 years go into beer saloons, to get the pint for their father; during the day, often for the mother or brother.

(d) Physicians prescribe immense quantities of patent medicines which contain large amounts of alcohol. Do not you think that those

patent medicines are causing numerous troubles, especially nervousness?

(e) But there is the most important cause to be mentioned and I think if the children would not be allowed to attend the 5-cent shows or so-called theatres, the terrible nervousness of thousands and thousands of children could be easily prevented. I do not need to tell you, ladies and gentlemen, what a great danger lays in that kind of theatres.

(f) The child should take a cold bath every morning and every evening. It should not eat too much meat; only milk, rice, eggs, butter, bread, vegetables and fruit. It should *never* drink coffee or tea.

(g) The *urine* of the children should be examined very often, on account of the quick changes of his daily life. Some urinary excrements, like *Indican*, *albumen*, *sugar*, *phosphates*, are the causes of nervousness and sleeplessness. Those excrements need special medication.

(h) The child should *not* be afraid of the teacher. Every chance should be given to him to make him like his Alma Mater.

I speak of my own experiences, of the excellent system we had in Austria-Hungary, where I was born and educated.

Dixi et salvavi animam meam!!!

SESSION FOURTEEN

Room C.

Wednesday, August 27th, 2:00 P.M.

MENTAL HYGIENE AND THE HYGIENE OF THE MENTALLY ABNORMAL CHILD (Part Two)

THOMAS W. SALMON, M.D., *Chairman*

DR. H. G. MATZINGER, Buffalo, N. Y., *Vice-Chairman*

Program of Session Fourteen

J. E. WALLACE WALLIN, Ph.D., Director of Psychological Clinic, School of Education, University of Pittsburgh, Pa. "The Distinctive Contribution of the Psycho-Educational Clinic to the School Hygiene Movement."

ELIZABETH FARRELL, B.S., Superintendent of Ungraded Classes, New York City. "The Place of the School in the Problem of Mental Deficiency."

JOHN J. CRONIN, M.D., Assistant Director of Child Hygiene, Department of Health, New York. "The Results of Applied Therapeutics to the So-Called Mentally Deficient Child."

HELEN MACMURCHY, M.D., Toronto, Canada. "Can the Mentally Defective Child be Educated in the Public School?"

FRANCIS E. FRONCZAK, A.M., M.D., Commissioner of Health, Buffalo, N. Y. "The Sub-Normal Child."

ELMER E. JONES, Ph.D., Professor Philosophy of Education, University of Indiana, Bloomington, Ind. "Responsibility of the School for the Delinquent Girl."

Paper Presented in Absentia in Session Fourteen

(Read by Title)

LEWIS M. TERMAN, Associate Professor of Education, Stanford University, Cal. "The Significance of Intelligence Tests for Mental Hygiene."

THE DISTINCTIVE CONTRIBUTION OF THE PSYCHO-EDUCATIONAL CLINIC TO THE SCHOOL HYGIENE MOVEMENT

BY

J. E. WALLACE WALLIN

It is only in the twentieth century that we have come to recognize that the conservation of school children involves more than inspection for physical diseases and defects, more than medical treatment and physical hygiene, and more than the provision of school lunches, sanitary drinking fountains, school houses properly regulated in regard to temperature, fresh air and humidity, open air classes for the tubercular and anaemic, and special classes for the crippled, deaf, and blind. It is only within the last few years that the laity and also very many of the experts have so much as suspected that there is a realm of mental orthogenesis (which I have elsewhere called "*orthophrenics*": See Individual and Group Efficiency, Psychological Bulletin, 1912, p. 394), independent of, although supplementary to, the realm of physical *orthogenesis* (to which I have previously applied the term "*orthosomatics*"); that there is a psycho-educational type of school inspection entirely different from physical, medical, or dental inspection; and that there is a sphere of corrective pedagogics and psycho-educational therapeutics paralleling the sphere of dento-medical care and the surgical removal or correction of physical handicaps.

How loath the human mind is to recognize or sanction new movements may be best indicated by the fact that while this International Congress has a section devoted to school inspection (or health supervision) it appears from the announcements that the connotation of the words "school inspection" is confined to physical inspection (medical and dental), although numerous theses* have been presented in the public prints during a number of years to show that there is a psycho-educational type of inspection radically different from dento-medical inspection, and although this type of inspection is now an accomplished fact in many of the leading centers of educational endeavor throughout the

*Thus articles written by the author in 1909 (Medical and Psychological Inspection of School Children, The American School Master, p. 435), in 1911 (The New Clinical Psychology and the Psycho-Clinicist, Journal of Educational Psychology, p. 121, 191), and in 1913 (Clinical Psychology: What It Is and What It Is Not, Science, p. 895; The Functions of the Psychological Clinic, Medical Record; Re-averments Respecting Psycho-Clinical Norms and Scales of Development, Psychological Clinic, p. 89).

country. A recent investigation by the writer showed that there are now in the schools, universities, and institutions of the United States somewhat over sixty so-called psychological clinics, some of which are manned by thoroughly trained clinical psychologists and others by psychologists with a limited clinical training. Besides these, there is a still larger number of centers of psychological inspection in which the work is done by teachers, nurses, physicians, or others who are tyros or amateurs in psychology and in psycho-educational therapeutics, and who, therefore, cannot be regarded as psycho-clinical technicians. It is evident, therefore, that we must extend the connotation of the term "school inspection" so that it will include three distinct phases: medical, dental, and psycho-educational.

The clinical psycho-educationalist performs certain functions which no other specialist had previously been trained to perform. The *pedagogue*, even though he be amply trained, was merely prepared to instruct, educate, and discipline children, but had no qualifications for making anything but the crudest psychological and educational diagnoses. He was in no sense a clinician. The *pediatrician* knew much about the physical diseases of young children and a good deal about the diseases of older children; but his knowledge of children's mental and educational deviations was limited to the merest generalities, and his knowledge of the examination technique of the psychological laboratory and of educational methodology and corrective pedagogy was extremely meager or practically nil. The *neurologists* and *psychopathologists* were versed in the nervous disorders of children and adults, and they knew a good deal about the phenomena of disordered or alienated mentality; but they knew far less about the minor forms of mental and pedagogical variation which more frequently occur in exceptional school children, and they had made little, if any, technical study of educational, experimental, and clinical psychology, of child study, of the principles of teaching, and of the differential pedagogic treatment required by each type of mentally deviating child. Likewise the ordinary *psychological expert* knew a good deal about experimental and physiological psychology and more or less about educational psychology and child study; but usually he had no professional training in elementary methods or special pedagogics, he had no training in clinical technique, and he lacked that first-hand experience with cases which is essential in order to become skilled in diagnosis.

Here, then, was a field of diagnosis for which the existing types of specialists, whether medical, psychological, or educational, had practically no scientific preparation whatever. But this gap, the existence of which is now quite obvious to the intelligent observer, is being rapidly filled by the development of psychological or psycho-educational clinics.

To America belongs the chief honor for constructive achievement in this field of applied psychology. In America we are rapidly developing a new type of psychologist or educationist trained in psycho-educational diagnosis and orthogenesis. The name "clinical psychologist" was applied to this type of worker by the founder of our first psychological clinic; (1) namely, Lightner Witmer, who founded his clinic in the University of Pennsylvania in March, 1896.

With the rapid multiplication of the psychological clinics during the last few years, there has developed a feeling in the medical profession that the clinical psychologist is encroaching upon a field pre-empted by, and held sacred to, the physician. This fear, however, is entirely without foundation. The work of the clinical psychologist (*i. e.*, the psycho-educational clinicist) and the medical man are not competitive or duplicative, but supplementary and correlative. To be sure, the clinical psychologist (psycho-educational clinicist) wants his cases medically and dentally examined in order that he may more accurately interpret his findings, but he leaves this work to the medical and dental specialists. If his clinic is well endowed, he will have a medical specialist or a number of medical specialists on his staff; otherwise he will utilize medical consultants from the dispensaries, hospitals, and medical schools. The educational clinicist seeks all the medical data available on his cases precisely as he seeks all the sociological, hereditary, pedagogical, psychological, and anthropometric facts that he can secure. But all these data are merely contributory to his chief purpose: the interpretation of the mental and educational peculiarities, abnormalities, reductions, or intensifications revealed by his psychological and educational tests and analyses. And the purpose of an accurate interpretation of the psychological and educational symptoms is, in turn, to enable him to prescribe appropriate orthogenic treatment. This may consist in giving advice to the parent or teacher regarding the proper mental hygiene of the child and regarding its proper educational classification and pedagogical training, or it may consist in referring the case to the dispensary, hospital, or a private practitioner for medical, dental, or surgical care. In any case, the function of the psychological clinic is distinctly *orthophrenic*, namely, the righting or correction of the mental functions which are deviating or abnormal, either by the removal of physical handicaps or by proper mental and educational treatment; the stimulation by appropriate stimuli of functions which are slowed down or retarded; and the placing of the child in the right educational classification or environment,

(1) It would be more appropriate to apply the terms *psycho-educational* to these clinics, because the *method* of examination is both psychological and educational, and the *aims* are distinctly educational.

so that he may attain with the least expenditure of energy and the least amount of friction to his maximal potential.

The clinic strives to determine what are the inherent mental and educational peculiarities and what the inherent strength of various mental functions in the child; whether he is only apparently or genuinely abnormal, subnormal, or supernormal; in which mental planes he is deficient and in which functions he is talented. But always the purpose of this detailed psycho-educational analysis is to furnish that insight which will enable the psychologist to place his case in the right place in the educational system, or to so adjust the educative materials and methods that they will minister effectively to the child's peculiar needs.

From what I have said, it is evident that the interest of the psycho-educational clinicist is in children who are *mentally and educationally unusual* and who can be helped by special psychological or educational treatment. This group includes, among other types, supernormal, bright, backward, feeble-minded, epileptic, psychasthenic, neurotic, speech-defective, and morally and emotionally unstable children.

At the University of Pittsburgh we are conducting a free dispensary psycho-educational clinic, to which the above and other types of children, including child prodigies, children with alexia, and with motor defects but without corresponding intellectual impairment, have been brought by parents, teachers, nurses, physicians, and social and settlement workers. Of a limited number of consecutive examinees (the first 181 who were thoroughly examined) which I have tabulated, 11% were classified as bright or supernormal, 11% as normal, and 77.9% as subnormal. Most of the subnormals were backward, namely, 39.2% of the entire number examined. Seventeen per cent. of all the cases were classified as feeble-minded, 11.6% as border cases, and 9.9% as merely retarded. Eight and eight-tenths per cent. were classified as morons, 6.6% as imbeciles, and .5% as idiots. While very few of the feeble-minded belonged to any special type, there were two Mongolians, one cretin, one paralytic, and one case of infantilism. The average amount of time devoted to the study of these cases was about one and one-half hours, while the maximum time given to any one case was over twenty hours. This case had been variously and fallaciously diagnosed as a moron, a moral imbecile, a degenerate, and a mild paranoiac, but the mental factors which were found to be responsible for his abnormal behavior pointed to an entirely different diagnosis.

Some of the advice which had been given to parents concerning many of these cases would be termed ludicrous, were it not that it was actually tragic. Parents had been told by so-called experts, "not to bother about their child as he was all right; not to worry, because the child would outgrow his trouble when he attained the ages of six or

seven, or thirteen or fourteen." In consequence practically all of these cases, which proved to be utterly hopeless so far as concerns restoration to normality, had been educationally neglected for years. They had wasted their childhood in the regular grades in the vain endeavor to do work for which they were utterly unfitted. Because of their inability to advance they had either been neglected in despair by the teachers or they had unduly monopolized the teacher's time and robbed the normal pupils of the attention which by right was theirs, or they had been promoted irrespective of their deserts merely to relieve the room of an intolerable burden. The crime was not the pupil's nor the teacher's, but society's. Society still complacently tolerates many a school system which utterly lacks the requisite machinery for the scientific psycho-educational classification of its educationally exceptional children, but it also must be conceded that one of the stumbling blocks to progress in work with mentally abnormal children is the schools themselves. During the past year I have had the interesting experience of having several teachers report to me that they wanted to send cases to the clinic for examination, but the principals refused permission. The principals said: "The children are all right; we will leave well enough alone, and proceed as we have done before. The fault is not with the children but with the inefficient teachers."

And now an interesting point is this: Two parents brought me two cases which the principal had refused to send. *Both of these children proved to be imbeciles.* And yet the omniscient principal had said they were all right and that the fault was the teacher's. As a general proposition the teachers who work daily with the pupils can gauge their mentality more accurately than many principals or superintendents.

The *moral* of my story is simply this: Just as the schools now *pedagogically* examine children as a matter of course, of legal right, and of routine, in order properly to grade and promote them, so must the schools as a matter of legal right and as a matter of fixed routine *psychologically* examine all mentally unusual children, so that they may be more accurately mentally and educationally classified and diagnosed. Only thus can we economically and scientifically train "all the children of all the people." But that mere formal mental testing, whether by the Binet or any other system, is only *one* element in psycho-educational diagnosis, and that psychological diagnoses cannot be adequately made by amateurs, but require a specialist who is as thoroughly trained as the best medical, neurological, or psychiatric specialists—these theses I shall defend in a paper before another section of this Congress (1).

1. Current misconceptions in regard to the Functions of Binet Testing and of Amateur Psychological Testers, Proceedings of the Fourth International Congress on School Hygiene, Session 42, Aug. 29, 1913.

DISCUSSION OF

J. E. WALLACE WALLIN'S PAPER

BY

THE AUTHOR

In answer to Dr. Ira S. Wile's remarks:

Under ideal conditions we ought to subject every school child to a psycho-educational examination at the time that it enters school for the first time, and periodically thereafter in case it does not develop normally. But I do not advocate this in practice, because to carry out such a program of work would require larger staffs of experts than the taxpayers will be ready to support. I do say, however, that every child who is retarded not more than two years in his school work, and every child who is obviously or even apparently mentally peculiar or abnormal, should be given a special psycho-educational examination, in addition to the regular dento-medical examinations which are now regularly given in all large school systems.

The methods and aims of a psycho-educational examination are not the same as those of a medical examination. The psycho-educational clinic, while closely related to, is not identical with the neurological or psychopathic clinic. I should say that the average physician would require three or four years of technical training in order to be able to learn skillfully to psychologically and educationally examine a mentally unusual child and skillfully to direct his educational development, just as I should say that it would require a similar period of time for the average psychologist to fully qualify himself to examine children medically (as well as psychologically). I do not think we shall soon reach the point where either the medical men or the psychologists (or the clinical educationists) will be ready to spend three or four extra years of prescribed study, in order to qualify themselves as double examiners (medical and educational). Therefore I maintain that we need, as a minimum, two types of specialists for the work of examining and directing the care and training of mentally exceptional children: an educational specialist thoroughly trained in the art of psycho-educational diagnosis and in the differential, corrective pedagogics appertaining to the different types of educationally exceptional children; and a medical man who has had special preparation in the art of detecting physical defects, and in pediatrics, neurology and psychiatry. The problems concerning the diagnosis, care, training and education of the many types of mentally and educationally exceptional children are so varied and complex that one type of specialist very probably cannot develop sufficient skill to satisfactorily handle them all.

ANSWER

BY

DR. J. E. W. WALLIN

To anonymous question, asked after the reading of the paper on "The Distinctive Contribution of the Psycho-Educational Clinic to the School Hygiene Movement."

Question: What do you do for your cases after you have examined them?

Answer by Dr. Wallin: That depends entirely on the results of the examination. There is no specific of universal applicability. There are indeed certain cases which can profitably be subjected to the same educative processes, but many cases require differentiated educational treatment. In the case of a pedagogically retarded child who rates normal mentally and whose school retardation is due to adventitious factors (frequent transfer from school to school, absence because of illness, disinterest, etc.), I should not prescribe a special curriculum of corrective work, but more individual attention. His is a problem for the "ungraded teacher," and not for the special class teacher. On the other hand, speech defectives, children weak in spelling or reading, etc., require special courses of corrective exercises. Moreover, every peculiar case should be carefully followed and subjected to later examinations so that the treatment may be modified to meet individual developmental needs.

THE PLACE OF THE SCHOOL IN THE PROBLEM OF MENTAL DEFICIENCY

BY

ELIZABETH E. FARRELL

In this paper an attempt will be made to indicate a new service which the school in intelligent communities is ready to give, and which the communities will use as soon as it is apparent that the school has information which makes for community good or ill.

The original purpose of the school was to provide a place for instruction. Instead of allowing the home to be the place of instruction the inhabitants in a given locality, for obvious reasons, concentrated their efforts and had their children instructed at one center in the rudiments of knowledge. Instruction is still the dominant part of school work. Its by-products are lost. To present some of the by-products and the use that can be made of them I offer two theses:

Thesis I. The public school should be the clearing house for all knowledge relating to the development of children which in any way affects community interests.

Thesis II. The school holds the strategic place in solving the problems of mental deficiency.

The first thesis suggests that the school has knowledge of child development which might modify in one way or another the community interests. What knowledge of this kind has the school? How does it affect the community? The school of to-day has knowledge of the child's physical well being, his mental ability, his power to make moral and ethical and social adaptations.

It is natural that as the education of great masses of children came to be looked upon as the function of the state, certain conditions arose which were not of any great import either in the education, as conducted in the home, or that carried on in the small school where each child, his family connection, etc., were known, not only to the teacher but to the patrons of the school. These conditions affected the cleanliness of the children, their health and their moral status. This consideration brought about medical inspection in the schools; perhaps the first result of these particular circumstances was the establishment in this country of what is known as corporate schools. They are almost entirely supported by private funds, though they do get a small allow-

ance from the public school budget. These corporate schools for one reason and another gathered in the very poorest of the children. These schools early recognized the necessity for better nutrition and furnished a mid-day luncheon for the children; they also supplied shoes, clothing and outings for such as needed them. As was to be expected, a stigma soon attached to the school and its pupils. They became known as poor schools, soup schools, etc. In this way the attention of the community was riveted on the fact that growing up in their midst were children whose school work was impaired because of poverty in the homes, malnutrition, bad housing, lack of proper clothing; these were shown as conditions affecting the development of children. The use made of this information was meagre. Individuals were helped when they would allow it; temporary relief in the shape of Christmas baskets, Christmas trees, outings, were provided, but there is no evidence that poverty was considered a condition against which children must be inoculated.

Medical inspection of school children arose because of the great number of children being instructed in the same place. The compulsory school attendance law drove the children of school age from the streets, the factory and the home into the school. The diseases and conditions of the grossest character were first the concern of the medical inspector. Contagious diseases—scurvy, measles, scarlet fever, pediculosis, impetigo, diphtheria, were hunted down until they are now practically a negligible quantity. The great decrease came after the school nurse was installed. As with poverty, so with contagious diseases, the nurse found that the child with scurvy came from a family with scurvy. To cure the child meant that the family was to be cured also. It would have been easier for the nurse to herself care for the child but her function is an educational one. Not only must relief be brought to the child but it must be brought in such a way as will safeguard him in the future.

With these grosser conditions, somewhat under control, the less obvious, but not the less serious phenomena, were looked after. Cardiac disease, tuberculosis, anemia, nervous disorder, came under the scrutiny of the medical inspector. Some defects and deficiencies were tabulated and recorded until we are staggered at hearing that thousands of children have defective vision, thousands have tachycardia or other disturbances of the circulatory system. While the earlier medical inspection was concerned primarily with the diseases due to lack of cleanliness and of physical care, and consequently with the slum districts, the later type of work finds fields for its activity all over the school system without regard to neighborhood, nationality, or economic conditions.

This is the information the school has through its medical inspec-

tion. As far as we understand the import of any of the facts, they are used. Recall the energy with which we fight an epidemic of measles. We keep the children from school and return to the earlier means of instructing them, the parent becomes the teacher or a governess is brought into the home. We take them into the country until the danger is passed. Those conditions which threaten the immediate, present day health of ourselves or of our children, we attend to. We spend money with a free hand; we bring to study the situation the best minds and the greatest specialists that can be found. We grumble that such an epidemic should be possible but our grumbling does not interfere with the battle we wage against that particular enemy.

How different our attitude when told that there is an epidemic—if I may use that word—of myopia, or anemia, or otitis media. We read without a flutter that there are sixty-six thousand children who need eyeglasses; that forty thousand are anemic, that nine thousand have hypertrophied tonsils and adenoid vegetations. This attitude explains two things: First, we do not yet appreciate how closely allied are all our lives. Second, the wealth we never have doesn't bother us. Dr. Gould pointed out some years ago that the world loses untold wealth in the shape of genius each year because of bad eyesight; we know from modern studies in penology that thousands of criminals are myopic. Who knows the relation of myopia to crime? Is it necessary to know it?

The very fact that we allow to go unused the knowledge that hundreds of children are growing to adult life with cardiac disease insures to our own children a legacy of a class of chronic invalids. A class of chronic invalids means a permanent tax on the property class. This is as it should be unless the property class, which alone has the means, seeks to bring the ounce of prevention which is better, we are told, than a pound of cure.

That great problem of nutrition has been obscured in this country by the "breakfast or no breakfast" cry. Not only absence of food, but improper food enters into the problem of nutrition. Who will say that the mother, who is obliged to work from five till nine each morning and who leaves the teapot on the stove and the bread on the table for the children's breakfast is in any position to provide proper nutrition for them? Or again, how can those unfortunate employees in the parasitic trades put the elements of good nutrition before their children to eat. Good and proper food and enough of it costs money. The parasitic trades do not pretend to pay enough to provide it. If the community realized that the most costly item in its budget was not of the benefit it should be because the children whom it reaches are badly nourished, the cry would be loud and long against the industries which claim to be unable to pay a living wage, and the fight for

minimum wage boards would be won. If the school would make known what it believes and can prove with little trouble, about the relation between poverty and school progress; physical health and school progress; sense defects and school progress; nutrition and school progress, we would give to fathers and mothers the right to a living wage, to children the right to good food, good shelter and good clothing, the right to health, and finally the right to a parent's care; to our own children we would in great part remove the obligation of caring for a permanent invalid class to be supported indirectly by them as long as they live. All of this and more the schools in your community can do.

It was said in the beginning that the school has information as to the child's power to make moral, ethical and social adaptations, which power is of great moment to the community. This power of moral, ethical and social adaptation, when present in a sufficient degree, is what makes the good citizen. To be industrious, honest, straightforward and courageous is to have the virtues needed in good community life. The ordinary school experiences of children give opportunity for the growth of these elementary virtues. Unfortunately some children are not able under ordinary conditions to grow in virtue. This inability may find its root in economic conditions, or in bad heredity, or in both. Whatever the cause, the right opportunity for development must be made. Education is no longer a privilege; it is a necessity. To send to the street, as is often done, the child who is unable to make the every day moral, ethical and social adaptations demanded by school life, is to lose sight of the purpose of education at the present time. As a breeder of good horses would not think of letting his prize colt scamper all over the hills and down in the deep dangerous places, so we must not allow the child who cannot adapt himself to school discipline, subject himself to the highly organized and complex life of the street. If our business is character building, we must work at it and never give up. As the physician recognizes illnesses which can be treated at home, others that need hospital care, and still others that need convalescent home care, so there must be steps in our scholastic system. For most children the ordinary day school, for some the probation school, for a few the truant school, for a minority the parental school.

Of the information the school has about the mental development of children in its charge, it is unnecessary to speak in detail. To explain the great movement for individual instruction which is everywhere spreading in this country we need only to look to the work in child psychology launched so brilliantly by G. Stanley Hall. His coterie, dispersing to remote parts of the land, have been the seed from which has grown the present interest in teaching exceptional children. But the school can do more than this. There is a phase of mental develop-

ment which it has not yet considered. We know something about bright children, about dull children, blind children, deaf children, and about mentally defective children and feeble minded children, but the school generally is not alive to its function with regard to children with minds diseased. The researches of Kraepelin at Heidelberg, Freud, Zung, Meyer and Hoch, indicate that certain characteristic marks of a whole group of mental disorders can be observed in early childhood, at the age of puberty or during adolescence. Every teacher knows there are certain peculiarities of character, certain defects in self-management which should be regarded as danger signals and should be taken much more seriously than is commonly the case. In trying to understand a given case of mental disorder, the psychiatrist makes careful inquiries into the life history, character, and habits of the patient; none of this information can be very definite or certain since the patient or his friends must depend entirely on memory. Recorded information is of the patient's early life, is almost never available. The psychiatrist is now obliged to view in retrospect the development of this mind diseased. The school has a duty to perform to this group of children, as well as a contribution to make to science in so far as the school is able to observe and to record the reactions children make to its environment. In order to help the psychopathic child, the school must understand such characteristics as reticence, seclusiveness, stubbornness, selfishness, brooding, day dreaming, sensitiveness, a type of suspiciousness, oddities and peculiarities. These attributes are innate personal traits. They push their roots deep down in the personality, they make almost impossible new adaptations demanded either by the environment or the changed internal life of the individual. When these adaptations are not made, mental breakdown ensues. To understand these traits and others like them; to appreciate that they are mistakes in self-management which must be corrected, may save to the world untold energy and guide on the road of healthy, harmonious self-managed living, individuals whom we, in ignorance, think of as doomed.

Conclusion. The school has to-day recorded knowledge of economic conditions and the physical well being of its children, which points with certainty to the continuance of the pauper class, the inefficient, the unemployed. These are continued because the school does not rise up and shout the effects of a life of hunger and sense defects upon the souls and upon the bodies of children. The school is continuing the criminal class since its knowledge of those children unable to make the ordinary moral and ethical adaptations demanded by it is incomplete and unused. The custodial homes for the feeble minded

are being assured another generation of inmates because the schools, even in those places where light has entered, are unable to transfer the feeble minded children of to-day to their sheltering care.

And finally the school is promoting, because it is not actually preventing, the increase in insanity by the careful observation and understanding and recording of those children of neuropathetic constitution whose mental health can be maintained only under intelligent guidance during the period of their instruction.

Thesis II. The School Holds the Strategic Place in Solving the Problems of Mental Deficiency.

In the great military campaigns carried on since life began for the extension of national limits in order to control food producing area commensurate with the needs of the people, one person, or board or agency, has been supreme. To the commander-in-chief, the war board, or the committee on military affairs is sent all knowledge as to the number and character of soldiers, infantry, cavalry, or what not. As well known as their own are the highways of the invaded country, its defenses, natural and artificial. The science of military command, generalship, power to direct the movements of regiments, battalions and armies are adjuncts to successful warfare. The struggle which is upon us now for the abolition of poverty, disease and defect is not unlike the warfare of contending armies. The aim only is different. In warfare the purpose is to destroy power, constructive effort, to kill men, to subjugate a people. In the struggle against the effects of poverty, we seek to conserve power, to add to the sum of constructive effort, to give life to men and that more abundantly, to free from the slavery of poverty, disease and defect, all the nations of the earth.

From the military men we must learn the value of strategic position—where to meet the enemy, that he may be routed at the least cost.

It is the purpose of this paper to show the school as such a place; that the school now is ready to recognize this as a legitimate evolution of its traditional function. As it seeks to dispel the darkness of ignorance it must conquer all factors contributing to ignorance. What contributes more than defect?

The school in the United States can, if it will, control the army of the unfit. Here we have compulsory school attendance laws, the enforcement of which puts under the scrutiny of the school all children between the ages of five and sixteen years. In some states the provision is made that such children as are "mentally and physically fit" shall attend school, those who are not are left without its benefi-

cent care. The fallacy of this position will be taken up later. According to the last Federal census there were 27,931,375 children under nineteen years of age, of whom 18,009,891 attended school. This attendance amounted for each child, to at least five hours a day, twenty-five hours a week; one hundred hours a year; from sixty-four to eighty thousand hours during the years of compulsory school attendance. During this long period what opportunity for the school to know the ability of the individual to assume the duties, obligations and relationship of a citizen! What opportunity to know the industry and application with which the industrial career will be embraced! Great as is the knowledge now possessed by the schools on the points suggested, the school of the future will surpass it. With the growth of knowledge as to what constitutes normal mentality; with the perfection of tests and other means of observation of mentality; with its smaller classes and more individual instruction the school of tomorrow will know with a certainty the kinds of minds its pupils have and the best way to train them. This will necessitate special classes of all types; special subject matter of instruction for each class. The progress of each child will be watched and recorded, not merely his ability to acquire knowledge from books, but his growing appreciation of his place in the system of existence; his feeling of responsibility toward his environment; his appreciation of life as an adaptation to surrounding conditions, or life as the will to secure power.

The schools will then be in truth human laboratories. Skilled observers will be at work in every school system in the land to create new knowledge; new science which is the one factor upon which the happiness, and healthy development of mankind depends. When we have such a study of children we will know what the problems of mental deficiency are. When we appreciate them we will control them. In what does this control consist? In the first place, control means using the knowledge we have to bring about certain ends. The end desired in this case is the elimination of the unfit. Granting that *all* of the children of school age (without regard to defect) are in school, it is obvious that we shall have under the eye of one department of government whatever of defective mentality exists in the school population. The emphasis is on the word "all." We have now in the schools of this and every other land children of all grades of mentality. On one hand the brilliant mind, on the other the imbecile. Between these extremes are infinite gradations. To teach any of them as they should be taught means as far as possible individual instruction, close classification, classes for children who are about alike; this means that there will be classes for dull, mentally defective and for feeble minded children;

classes, also, for bright and the genius type of child as well as for the average child.

What opportunity for control does the presence in the school of these mentally defective, feeble minded, dull children put into the hands of the state? This segregation of children of defective mentality within the school serves as an object lesson to the community. Many will for the first time appreciate this problem. By carrying these children along under the best possible circumstances of medical, surgical and educational care, their ability to maintain themselves in decency and in some degree of comfort will be demonstrated. Their personal and family histories will be known. The examining specialists will be able to state with some certainty as to the hereditary character of the condition, and these facts will determine which, if any, are to be thrown into the maelstrom of human affairs.

When we learn to regard the mentally defective as children we will provide for them accordingly. We will push farther and farther along the limits of age during which we provide for the young. As we now no longer leave the young child to be instructed at home but send him rather to a school, a place where special equipment, special supplies, special opportunity is made for his education, so we will some day soon provide for the further education and training of the mentally defective person when he has exhausted the resources of the school. He will be transferred to state schools for persons of his type. These state schools will be boarding schools, custodial homes, but places of interesting and purposeful activity.

In order to safeguard in every particular the right of the individual, of his parent, and of the community, the transfer to, or, from such a boarding school, as has been described, will be made only after certain legal procedure has been complied with. A state board of control, to which the school authorities, or the parent, or both, may refer any case which seems a menace for whatever reason, will be the court of last appeal in cases of mental deficiency or of idiocy. Such a board of control should be made up of physicians, educators, sociologists and psychologists. It should have charge of all mentally defective persons not under the immediate control of the education department. By some such method as this we will have going into the custodial homes, children who have been under educational training for a period of years and are able to do something. We will leave the burden of supporting these mentally defective children during infancy and early childhood on the parent, since it costs no more to support a defective in his home than it does a normal child; it will leave for the use of the individuals who urgently need them, the all too few, vacant beds in our institutions;

it will take advantage of the high death rate among mentally defective children and thus indirectly save money to the state.

In this the uppermost thought must be kindness to the individual. Whatever our duty to race stock, there is no question about our responsibility to our weaker brother. His right to a longer period of the brood care we call education must be secured to him without the shadow of a stigma upon it. We must endeavor to make up some of all that his deficiency costs him. By doing this and carrying it on as an extension of the prerogatives of the educational system, we will, as a by-product of our care, tap at its source the supply of another generation of defectives. The children in the custodial schools will live as children, and as far as they personally are concerned, will not leave their progeny to inherit their dependence, their misery and their shortcomings. It is not supposed that the whole problem of mental deficiency will disappear immediately, what is held is that by the exercise of its legitimate functions the school is the logical clearing house for all information relating to the development of children and which affects community interests, and that it is the strategic point in the elimination of mental deficiency.

THE RESULTS OF APPLIED THERAPEUTICS TO SO-CALLED MENTALLY DEFICIENT CHILDREN

BY

JOHN J. CRONIN

During the school year 1912-1913 the Division of Child Hygiene, Department of Health, City of New York, determined to inquire into the mental and physical status of the children who had been assigned to classes in the public schools for mental deficient. The inquiry was to determine the mental and physical status of each child and the justification of the authorities for placing children in these classes. Every necessary and required means were afforded by the Department of Health to investigate every phase of the conditions of these children. The physical, mental and social status of the child was examined and recorded.

The following authorities were engaged in the work that the results might be more accurate:

1. The Department of Health which supplied medical inspectors and nurses and hospital facilities.
2. The Department of Education which supplied reports on the behavior and pedagogical status of the child before and after therapeusis was supplied.
3. Semi-philanthropic hospitals where special neurological examinations were made, the Binet standard coefficient determined and a report made to the officers of the Division of Child Hygiene.

The social conditions were investigated by the Department of Health nurses. These nurses obtained written permission from the parents that operation or other treatment might be applied; they took the children to and from the hospitals and dispensaries and returned them to their homes; they instructed the parents in better methods of hygiene and sanitation and by a system of weekly home visits actually produced results in the home conditions. The services of these nurses were limited to efforts for the mentally deficient children.

The children were examined and treated by specialists in the following departments: Medicine, eye, nose and throat, dentistry, internal medicine and neurology.

All examinations were objective and subjective tests were only applied to corroborate the objective findings.

The nurses did excellent work in providing eye-glasses for the poor children through philanthropic agencies.

The results obtained in a high proportion of cases were amazing. As is usual in such studies as this, due to parental inertia or objection, sudden removals from localities and leaving school, many histories are not rounded out.

It seems worth while and interesting to note that in a large number of children between six and eight years of age, if located and they have any mental potentiality, when their abnormalities are corrected and they are placed in a proper class, they regularly improve. It must be clearly understood that the correction of physical deformities will have no effect on an essential mentally deficient child.

The histories will show that many children have been advised to be placed in a normal class by the neurologist in order that such child may reap the benefit of normal environment. The State is burdened with too many irresponsibles and every available means must be applied to children about to be committed to these mentally deficient classes that none may be placed in these classes except true mentally deficient children.

The present standards of measurements are simple and fairly accurate; neglecting to apply all the present standards and tests before the child is placed in an ungraded class is certain to result in criminal injustice to some children.

All nose and throat operations are performed by the Department of Health specialists in the Children's Clinics of the Department of Health. The children are harbored the night before the operation, operated on under full anaesthesia and harbored the night of the day of the operation, examined by a physician on the day following and discharged and advised to return for subsequent examination.

The shadow test to determine the error of refraction only is used.

The failure of many children to respond after the correction of defects has many times been shown to be due to essential idiocy by the report from the neurologist. It would have been interesting to have the neurological report before the physical examination and the correction of abnormalities instituted. Thus it might be possible to check on the value of the neurological report in itself. Many of the cases whose histories are here given show that the neurological diagnosis is idiot or imbecile, whereas, the pedagogical report shows continued improvement in class work after the application of proper treatment.

A brief summary of the results of this work is as follows:

Male.....	154
Female.....	63
Defective vision.....	187
Glasses prescribed and O. K.....	138
Adenoids and tonsils removed.....	29
Adenoids and tonsils not removed.....	4
Defective teeth.....	84
Defective hearing.....	5
Chorea.....	2
Malnutrition.....	10
Orthopedic defect.....	5
Tuberculosis.....	2
Stutters.....	4
Endocarditis.....	6
Blocked nasal breathing.....	19
Neurological report: Normal.....	94
Neurological report: Mentally deficient.....	123
Pedagogical improvement.....	94
These children were completely isolated from the world.	
No pedagogical improvement.....	123

I want to read the histories of a few special cases for you that seem remarkable in the results obtained:

CASE 82.

Male. 9 years. Native born.
 Irish descent. Examined Jan. 17, 1913.
 Defective vision: R. + 1.50s. L. + 1.75.
 Glasses given: R. + 1s. L. + 1.25s.
 Glasses O. K.
 Re-examined Feb. 11, 1913: Could not read before getting glasses, now reads well and is about ready to go into regular grade.

CASE 83.

Male. 14 years. Native born.
 Irish descent. Examined Feb. 5, 1913.
 Defective vision: O.U. + 1.25s.
 Glasses given: O.U. + .75s.
 Glasses O. K.
 Re-examined April 21, 1913: Improvement in number work, reading and copying.
 Neurological report: Normal and should be tried in regular grade work.

CASE 95.

Female. 13 years. Native born.
 Irish descent. Examined Feb. 24, 1913.
 Defective vision: R. + 3s. L. + 3.50s.
 Glasses given: R. + 3s. L. + 2.50s.
 Glasses O. K.
 Enlarged tonsils and adenoids removed.
 Defective teeth repaired.

Re-examined 3-17-13: Very much improved in writing.
 Re-examined 3-20-13: Improved in all class work; concentrated and interested.
 Re-examined 5- 6-13: Improvement continues; will be promoted to regular grade.
 Neurological report: Actual age, 13 years; Binet standard 9.6 years. Mentally normal.

CASE 113.

Male. 10 years. Native born.
 German descent. Examined 1-16-13.
 Defective vision: R. + 50c. + 180. L. + 25s. + 50c.—180.
 Glasses prescribed as above.
 Glasses O. K.
 Re-examined Feb. 11, 1913: Improvement in all branches especially in arithmetic.
 Re-examined Mar. 10, 1913: Can do regular class work.
 Re-examined May 8, 1913: Improvement continues.

CASE 127.

Male. 10 years. Native born.
 Russian descent. Examined 12-20-13.
 Defective vision: R. + 4.50s. + 2c. + 45. L. + 3s. + 1.50c. + 155.
 Glasses given: R. + 3s. + 2c. + 45. L. + 2s. + 1.50c. + 155.
 Defective teeth repaired.
 Blocked nasal respiration.
 Adenoids and tonsils removed.
 Re-examined Jan. 20, 1913: Sees board better.
 Re-examined Mar. 10, 1913: Very much improved in all class work. Promoted to regular grade.
 Re-examined April 17, 1913: Since operation and adjustment of glasses has passed Binet test above age and has progressed from 1A work to 3A work in class and doing excellent work.

CASE 166.

Male. 8 years. Native born.
 Italian descent. Examined 1-27-13.
 Defective vision: R. + 3.50c. + 90. L. + 4c.
 Glasses prescribed: R. — .50s. + 3c. + 90. L. — .25s. + 3.50c. + 90.
 Re-examined 4-28-13: Great improvement in all class work. Could not read before glasses worn, now reads 1B readed; also improvement in writing and number work. Particular improvement in co-ordination. Previously was very uncertain in all his movements. Could not play any games such as catching a ball; now is quite capable to play baseball.
 Re-examined 5-20-13: Improvement continues.

The following is the individual histories of every child giving the essential points connected with each history.

Cases are arranged in alphabetical order. Except wherein especially noted it will be understood that the home conditions are considered such as is found in the average tenement family.

All eye examinations are made by the shadow test after the instillation of one drop in each eye of a 2% homatropine solution every fifteen

minutes for four instillations; at the end of the next fifteen minutes the instillation of one drop in each eye of a 1% solution of cocaine hydrochloride.

CASE 1.

Male. 12 years. Native born.
 Spanish descent. Examined February 21st, 1913.
 Vision defective.
 Error of refraction: O. U. + 1.25s. + 50c. + 90.
 Glass procured and O. K.
 Refuses to wear glasses.
 Neurologist report: Mentally normal,
 Home conditions—average tenement.
 No pedagogical improvement.

CASE 2.

Male. 11 years. Native born.
 Irish descent. Examined December 20th, 1912.
 Defective teeth.
 Wearing: O.U. + 50s. Glasses O. K.
 No improvement.
 Neurologist report: Mentally defective.
 Home conditions—average tenement.
 No pedagogical improvement.

CASE 3.

Male. 13 years. Native born.
 German descent. Examined December 16, 1912.
 Has defective teeth and defective vision.
 Shadow test shows refractive error: R. + 3s. + 1.50c. + 95. L. + 6s. + .25c. + 90.
 Glasses prescribed: R. + 2s. + 1.50c. + 95. L. + 4s. + .25 + 90.
 Glasses O. K.
 Pedagogical report, 1-15-13: Doing better work.
 2-20-13, now in regular grade.

CASE 4.

Male. 13 years. Native born.
 Italian descent. Examined December 18, 1912.
 Defective teeth and defective vision.
 Shadow teeth shows vision: R. + 4.50s. + 50c. + 90. L. + 5.50s.
 Glasses prescribed: R. + 3s. + 50c. + 90. L. 3.50.
 Glasses O. K.
 Home conditions—below average.
 Pedagogical report: No improvement.

CASE 5.

Male. 11 years. Native born.
 Italian descent. Examined November 25, 1912.
 Defective vision.
 Error of refraction: R. — 4s. — 3c. + 40. L. — .50s. — 2.50c. + 1.60.
 Glasses prescribed and O. K.
 Pedagogical report: No improvement.

CASE 6.

Female. 13 years. Native born.
 Polish descent.
 Defective vision: O. U. + 2s.
 Glasses prescribed O. K.
 Pedagogical improvement: None.
 Neurological report: Imbecile and an institutional case.
 Home conditions—below average.

CASE 7.

Male. 9 years. Native born.
 Italian descent. Examined March 18, 1913.
 Hypertrophied tonsils and adenoids.
 Defective vision.
 Error of refraction: R. + 1s. + 25c. + 180. L. + 1s.
 Glasses prescribed: R. + 50s. + 25c. + 180. L. + 50s.
 Pedagogical improvement: None.
 Home conditions—average.

CASE 8.

Male. 7 years. Native born.
 Russian descent. Examined February 24, 1913.
 Blocked nasal breathing.
 Pronounced true idiot at Neurological Institute.

CASE 9.

Male. 7 years. Native born.
 Russian descent. Examined November 27, 1912.
 Cannot get a satisfactory shadow test.
 Blocked nasal respiration.
 Bad teeth.
 Neurological Institute report: Hopeless idiot.
 Cannot get any remedial effort applied.
 Child and parents uncontrollable.

CASE 10.

Female. 10 years. Native born.
 Austrian descent. Examined December 24, 1912.
 Defective vision: R. 1.50s. L. 1.50s.
 Glasses prescribed: .75s. O. U.
 Glasses O. K.
 No improvement noted.

CASE 11.

Male. 8 years. Native born.
 Italian descent. Examined November 27, 1912.
 Defective vision and defective teeth.
 January 2, 1913.
 Refractive error: O. U. + 1.50s.
 Glasses prescribed: O. U. + .75s.
 No improvement noted.
 Home conditions—average tenement.

CASE 12.

Male. 15 years. Native born.
 Bohemian descent. Examined January 2, 1913.
 Defective vision: R. + .50s. + 50c. + 5. L. + .50s. + 37c. + 180.
 Child discharged from school; no subsequent report obtainable.
 Home conditions—average tenement.

CASE 13.

Male. 12 years. Native born.
 American descent. Examined January 16, 1913.
 Defective vision: R. + 4s. + 50c. + 120. L. + 4s. + 50c. + 60.
 Home conditions—average.
 Glasses prescribed: R. + 2s. + 50c. + 1.70. L. + 2s. + 50c. + 60.
 Pedagogical report.
 March 3rd., 1913.
 Could not read before glasses were worn, but now reads readily.
 Improvement continued.

CASE 14.

Male. 16 years. Native born.
 American descent. Examined December 17, 1912.
 Defective speech and defective teeth.
 Home conditions—average tenement.
 Is a true idiot.

CASE 15.

Male. 13 years. Native born.
 Russian descent. Examined December 5th, 1912.
 Defective vision: R. — 50s. — 50c. + 180. L. — 50s.
 Glasses prescribed as per defect.
 Home conditions—average.
 No pedagogical improvement.

CASE 16.

Male. 10 years. Native born.
 Polish Jew descent. Examined January 4th, 1913.
 Defective permanent teeth.
 Defective vision: R. + 1.50s. + .75c. + 90. L. + 1.50s. + .75c. + 90.
 Neurological report: Idiot. Institutional case.
 Pedagogical report: No improvement.
 Home conditions—average.

CASE 17.

Male. 11 years. Native born.
 Bohemian descent. Examined January 7th, 1913.
 Defective vision: O. U. + 75s. + 180.
 Glasses prescribed but not obtained.
 No pedagogical report.
 Home conditions—average.

CASE 18.

Female. 7 years. Native born.
 American descent. Examined February 20, 1913.
 Defective vision: R. + 2.50s. + 2.50c. + 100. L. + 2s. + 1.50c. + 85.

Glasses prescribed: R. + 1s. + 2c. + 100. L. + 1s. + 1.50c. + 85.

Glasses O. K.

Pedagogical report, March 21, 1913: Improved reading and writing.

April 15th, 1913: Steady improvement in all branches. Hope to be promoted to regular grade.

May 6th, 1913: Promoted on trial. Doing excellent work in 1B grade since wearing glasses.

June 11th, 1913: Neurological report: Normal mentality.

CASE 19.

Female. 12 years. Native born.

Irish descent. Examined January 21, 1913.

Defective vision: R. + 1c. a + 90. L. + 50c. a + 90.

Glasses verified and O. K.

Blepharitis ciliaris.

Home conditions—average tenement.

Pedagogical report: Some improvement.

CASE 20.

Male. 10 years. Native born.

American descent. Examined December 17, 1912.

Defective vision: O. U. + 1s.

Glasses prescribed: + .50s.

Glasses O. K.

No improvement noted.

CASE 21.

Male. 12 years. Native born.

Bohemian descent. Examined December 20th, 1912.

Defective permanent teeth.

One paternal aunt insane.

Home conditions—average tenement.

No neurological examination.

No pedagogical improvement.

Teeth attended to.

CASE 22.

Male. 13 years. Native born.

American descent. Examined February 13th, 1913.

Defective vision: O. U. + 1s.

Glasses prescribed: + 50s.

Re-examined May 6th, 1913.

Improvement in reading and writing.

Home conditions—average.

CASE 23.

Male. 8 years. Native born.

German descent. Examined December 26th, 1912.

Defective vision: L. + .25 a + 35.

No reflex symptoms.

No glasses prescribed.

Home conditions—average tenement.

No pedagogical improvement.

CASE 24.

Male. 8 years. Native born.
 Russian American descent. Examined January 16th, 1913.
 Defective vision: R. + 2s. + 75c. + 90. L. + 2.50s.
 Glasses prescribed: R. + 2s. + 75c. + 90. L. + 2.50s.
 Glasses O. K.
 Teacher reports more quiet and improvement in general conduct.
 Neurological report: Boy is mentally deficient but prognosis favorable for improvement.

CASE 25.

Male. 13 years. Native born.
 Italian descent. Examined February 10th, 1913.
 Defective teeth and defective speech.
 Teeth attended to.
 Home conditions—average tenement.
 Neurological report: A moron.
 Pedagogical report: No improvement.

CASE 26.

Male. 11 years. Native born.
 American descent. Examined December 18th, 1912.
 Defective vision: R. — 1.25s. L. — 75s.
 Blocked nasal respiration.
 Refused adenoid and tonsil operation.
 Glasses prescribed and O. K.
 May 16th, 1913: Mother says: "Since wearing glasses has improved in writing and can spell his name." Teacher reports: "Shows more interest in visual work as carpenter."

CASE 27.

Male. 14 years. Native born.
 Italian descent. Examined February 6th, 1913.
 Defective vision: R. + 1s. L. + 50s. + 50c. a + 1.80.
 Glasses prescribed: R. + .50. L. + 5s. a + 1.80.
 Re-examined April 21, 1913.
 Some improvement in work.
 May 28th, 1913: Neurological report: Teachable, but should be in an institution as a moron.

CASE 28.

Male. 10 years. Native born.
 Italian descent. Examined January 6th, 1913.
 Strabismus: O. U. + 5s.
 Defective teeth and hypertrophied tonsils and adenoids.
 Glasses prescribed: O. U. + 4s.
 Tonsils and adenoids removed.
 Re-examined March 15th, 1913.
 Pedagogical report: Wonderful improvement. Teacher never saw him open his eyes wide until after glasses worn. Temper much better. Before wearing glasses had violent outbreaks.
 May 20th, 1913: Pedagogical report: Improvement continues. Conduct shows particular improvement.

CASE 29.

Female. 10 years. Native born.
 Italian descent. Examined January 23, 1913.
 Defective teeth.
 A true mental imbecile.

CASE 30.

Female. 12 years. Native born.
 Irish descent. Examined January 13, 1913.
 Defective vision: R. — 1s. — 50c. + 15. L. — — 25c. + 180.
 Defective teeth.
 Glasses prescribed: R. — 1s. — 50c. + 15. L. — 25c. + 180.
 Glasses verified and O. K.
 No improvement.
 Neurological report: A true mental defective.
 Home conditions—average tenement.

CASE 31.

Male. 18 years. Native born.
 Italian descent. Examined January 29, 1913.
 Hypertrophied tonsils.
 Refused treatment.
 No improvement.
 Hydrocephalic imbecile.
 Home conditions—average tenement.

CASE 32.

Female. 9 years. Native born.
 Italian descent. Examined December 19th, 1912.
 Defective teeth.
 Defective vision: O. U. + 1.25s.
 Glasses prescribed: + 67.50s.
 Glasses verified and O. K.
 Re-examined February 15th, 1913.
 Improvement in visual work.
 April 17th, 1913: Improved in reading and writing.
 Orthopedic defect: Spinal. Under treatment.

CASE 33.

Male. 7 years. Native born.
 Italian descent. Examined December 3rd, 1912.
 Defective vision: Slight hyperopia.
 No glasses given.
 No improvement noted in school.

CASE 34.

Female. 9 years. Native born.
 Italian descent. Examined November 27th, 1912.
 Defective teeth.
 Defective vision: R. 50s. + 150c. + 90. L. — 50s. + 150c. + 90.
 Glasses prescribed as above required.
 Glasses verified and O. K.
 Teeth attended to.

Home conditions—average tenement.

Neurological report, June 3, 1913: Shows mental age of 6 years.

Mental coefficient, .66. She is well and attentive but utterly lacking in comprehension, observation and reasoning and undoubtedly is very defective. Will need safeguarding about puberty.

CASE 35.

Male. 9 years. Native born.
Italian descent. Examined February 24th, 1913.
No results obtainable.
Neurological report: Low grade mental defective. Institutional case.

CASE 36.

Male. 9 years. Native born.
Cuban descent. Examined December 31, 1913.
Defective teeth. Vision test impossible.
True mental defective.

CASE 37.

Female. 11 years. Native born.
American descent. Examined December 26th, 1912.
Defective vision: R. + 3s. + 150c. + 95. L. + 3s. + 150c. + 90.
Home conditions—average tenement.
Glasses prescribed: R. + 3s. + 1.50c. + 95. L. + 3s. + 1.50c. + 90.
Glasses O. K.
Re-examined February 20th, 1913: Less nervous.
April 17th, 1913: Improved in disposition and self-control; also in writing and sewing.
Diurnal enuresis cured.
After wearing glasses for two months the glasses were broken and child was without glasses for two weeks. Enuresis returned and all adverse temperamental disorders. Teacher reports: "Without glasses child would do no work, is uncontrollable and very irritable; looks white and drawn." Replacing the glasses the child was completely relieved again of all disorders. Improvement continues.

CASE 38.

Male. 9 years. Native born.
Italian descent. Examined December 4th, 1912.
Defective vision: R. + 2s. + 1c. + 105. L. + 2s. + 50c. + 90.
Glasses O. K.
Re-examined February 15th, 1913: Improvement in writing and spelling.
April 16th, 1913: Continued marked improvement in all school tasks.

CASE 39.

Male. 14 years. Native born.
Irish descent. Examined December 5th, 1912.
Defective vision: O. U. + .50s.
Glasses O. K.
Re-examined February 15th, 1913.
Promoted to regular grade.
April 10th, 1913: Is doing good work in regular grade.

CASE 40.

Male. 9 years. Native born.
 Russian descent. Examined December 9th, 1912.
 Defective teeth and defective vision.
 Divergent strabismus: R. — 75c. + 90. L. — 5s.
 Glasses O. K.
 Re-inspected February 15th, 1913.
 Improved in school work.

CASE 41.

Female. 9 years. Native born.
 Italian descent. Examined March 18th, 1913.
 Blocked nasal respiration.
 Defective teeth.
 Defective vision: R. + 4.50s. + 1c. + 90. L. + 3s. + 1c. + 90.
 Glasses prescribed: R. 3.50s. + 1c. + 90. L. 2s. + 1c. + 90.
 Glasses O. K.
 Tonsils and adenoids removed.
 Teeth attended to.
 Re-examined April 23, 1913: Improved in reading, writing and sewing.
 Neurological report: Very low grade mentality.

CASE 42.

Male. 9 years. Native born.
 Italian descent. Examined March 18, 1913.
 Defective vision: R. — 1s. — 1c. + 10. L. — 1.50c. + 170.
 Glasses O. K.
 Re-examined May 8th, 1913: Improved in reading and writing. Is more attentive and brighter.

CASE 43.

Female. 13 years. Native born.
 Italian descent. Examined March 18th, 1913.
 Hypertrophied tonsils: Operated.
 Re-inspected 5-20-13: No improvement.

CASE 44.

Male. 12 years. Native born.
 German descent. Examined January 21st, 1913.
 Defective teeth.
 Defective vision: R. + 250s. L. + 3s.
 Glasses prescribed: R. + 1.50s. L. + 2s.
 Glasses O. K. Teeth repaired. Improvement in all school tasks.

CASE 45.

Female. 15 years. Native born.
 English descent. Examined January 15th, 1913.
 Defective vision: R. + 50s. + 50c. + 90. L. + 50s. + 50c. + 90.
 Glasses prescribed: R. + 25s. + 50c. + 90. L. + 25s. + 50c. + 90.
 Glasses O. K. Re-examined March 15, 1913. Improved in reading and number work.
 Before glasses adjusted could accomplish nothing.

CASE 46.

Male. 11 years. Native born.
 German descent. Examined January 16th, 1913.
 Defective vision: Is wearing a proper glass.
 Neurological report, June 4, 1913: Actual age, 11 7-12 years. Mental age, 8 1-5 years.
 Coefficient, .77. Hydrocephalic. Has scrotal hydrocele. Mentally defective
 and effeminate. Excellent memory. Lacks comprehension, reasoning and imag-
 ination.

CASE 47.

Male. 10 years. Native born.
 American descent. Examined January 21st, 1913.
 Defective teeth.
 Defective vision: O. U. + 1.25s.
 Glasses given: + 50s.
 Glasses O. K.
 Teeth repaired.
 Neurological report: True mental defective.

CASE 48.

Female. 13 years. Native born.
 American descent. Examined February 20th, 1913.
 Defective vision: O. U. + 1s.
 Glasses prescribed: O. U. + .50s.
 Glasses O. K.
 Re-examined March 4th, 1913: Better progress in school tasks; concentration much
 improved.

CASE 49.

Male. 9 years. Native born.
 Italian descent. Examined February 24th, 1913.
 Defective vision.
 Hypertrophied tonsils and adenoids; blocked respiration; otorrhoea; defective teeth.
 Defective vision: O. U. + 1.50s. + 50c. + 90.
 Glasses given: + 75s. + 50c. + 90.
 Glasses O. K.
 Tonsils and adenoids operated.
 Re-examined March 28, 1913: Conduct improved; quiet and obedient.
 Neurological report, June 20, 1913: Actual age, 10 years. By Binet test measure,
 5.8 years.
 Is an imbecile. Institutional case.

CASE 50.

Male. 11 years. Native born.
 American descent. Examined November 20th, 1913.
 Defective vision, strabismus and defective teeth.
 Wearing: O. U. + 3s. O. K.
 Re-examined April 14, 1913: O. U. + 3s.
 Re-examined June 17, 1913: Strabismus much improved; more quiet.
 Pedagogical improvement steady; marked improvement in reading and writing.

CASE 51.

Female. 7 years. Native born.
 Italian descent. Examined November 27th, 1912.
 Defective vision.
 Blocked nasal condition; hypertrophied tonsils and adenoids.
 Defective vision: O. U. + 2s.
 Glasses given: O. U. + 1s.
 Tonsils and adenoids operated.
 Glasses O. K.
 Re-examined Jan. 2, 1913: Better conduct and concentration; is much less restless.
 March 28th, 1913: Improvement in school tasks continue and child promoted to regular class for age 2A.

CASE 52.

Female. 14 years. Native born.
 Italian descent. Examined February 17th, 1913.
 Defective vision: O. U. + 3s.
 Converging strabismus.
 Hypertrophied tonsils and adenoids.
 Defective teeth; malnutrition.
 Glasses prescribed and O. K.
 Teeth repaired; tonsils and adenoids removed: medical treatment for malnutrition.
 Re-examined March 4th, 1913.
 Glasses have corrected the strabismus and school work much improved.
 April 3rd, 1913: All school tasks show improvement. Strabismus entirely corrected.
 May 6th, 1913: Improvement in all branches continues.

CASE 53.

Female. 15 years. Native born.
 Russian descent. Examined December 4th, 1912.
 Defective vision: R. + 1c. + 90. L. + 50c. + 110.
 Glasses prescribed and O. K.
 Defective teeth repaired.
 Re-examined Jan. 17th, 1913: Improvement in conduct and reading and writing.
 Home conditions—average tenement.

CASE 54.

Female. 9 years. Native born.
 American descent. Examined January 14th, 1913.
 Defective vision: R. + 1.50s. L. + 2s.
 Glasses prescribed: R. + 50s. L. + 1s.
 Glasses O. K. No improvement in class work. True imbecile.

CASE 55.

Male. 12 years. Native born.
 Jewish descent. Examined February 5th, 1913.
 Defective vision: O. U. + 1.50s.
 Glasses prescribed: O. U. + 75s.
 Glasses O. K.
 Defective teeth repaired.

Anaemic—constitutional medication.

Re-examined March 1, 1913: Improved in reading, writing and visual work.

June 12th, 1913: Neurological report: "True imbecile."

CASE 56.

Male. 15 years. Native born.
Russian descent. Examined February 14th, 1913.
Defective vision: Wearing glasses; glasses O. K.
No improvement; true imbecile.

CASE 57.

Female. 10 years. Native born.
German descent. Examined November 27th, 1912.
Defective vision: R. + 3.50c. + 100. L. + 1.25s. + 1c. + 90.
Defective teeth; chronic endocarditis.
Glasses O. K. No improvement; imbecile.

CASE 58.

Male. 14 years. Native born.
German descent. Examined January 13th, 1913.
Defective vision: R. + .50s. + 2c. + 35. L. + .50s. + 2c. + 1.65.
Glasses O. K. No improvement; true mental defective.

CASE 59.

Male. 8 years. Native born.
American descent. Examined January 29th, 1913.
Defective vision: R. — 1s. L. — 1s.
Glasses O. K.
Re-examined Feb. 20th, 1913: Improved in writing "strikes the lines."
April 28th, 1913: Some improvement in all visual work. Better concentration and is now interested.

CASE 60.

Male. 14 years. Native born.
American descent. Examined January 29th, 1913.
Defective vision: O. U. + 1.50s.
Given glasses: O. U. + 75s. Glasses O. K.
Operated for adenoids and tonsils.
Very slight improvement in class work.
Neurological report: A moron; actual age, 15 years. Binet test measures 9.2 years.
Comprehension, fair; memory, poor.

CASE 61.

Female. 8 years. Native born.
Russian descent. Examined December 3rd, 1912.
Defective vision: O. U. — 3s.
Glasses prescribed.
Blocked nasal breathing; flat feet; defective teeth.
No improvement; is a true idiot.
Committed to an institution.

CASE 62.

Male. 10 years. Native born.
 American descent. Examined January 24th, 1913.
 Defective vision: R. + 1.50s. + 1.50c. + 110. L. + 1s. + 2c. + 80.
 Glasses prescribed: R. + 75s. + 1.50c. + 110. L. + 50s. + 2c. + 80.
 Glasses O. K.
 Defective teeth.
 No improvement.
 June 26th, 1913: Diagnosed hydrocephalic imbecile.

CASE 63.

Male. 9 years. Native born.
 Jewish descent. Examined December 16th, 1912.
 Defective vision: R. 6s. + 50c. + 140. L. 6s.
 Glasses prescribed: R. + 4s. + 50c. + 140. L. + 4s.
 Glasses O. K. Vision O. U. 20-40.
 Teeth repaired.
 Re-examined Feb. 1, 1913: Much more quiet and attentive.

CASE 64.

Female. 15 years. Native born.
 Italian descent. Examined February 19th, 1913.
 Defective vision: O. U. —5c. + 90.
 Glasses prescribed and O. K.
 Re-examined March 4, 1913: Sees better; more concentration.
 June 2nd, 1913: Much improved in reading, writing and sewing; of very low mentality.

CASE 65.

Female. 15 years. Native born.
 German descent. Examined January 14th, 1913.
 Defective vision: R. + 50s. + 50c. + 55. L. + 25c. + 90.
 Given glasses: R. + 50c. + 55. L. + 25c. + 180. Glasses O. K.
 Re-examined. Reads better. No squint of eyelids now; more quite and attentive; no attacks.

CASE 66.

Female. 15 years. Native born.
 German descent. Examined February 27th, 1913.
 Defective vision: O. U. + 450s.
 Glasses given: O. U. + 3s.
 Glasses O. K.
 Teeth repaired.
 Re-examined March 20th, 1913.
 Some improvement in all school tasks.
 Transferred to institution.

CASE 67.

Female. 10 years. Native born.
 Russian descent. Examined December 19th, 1913.
 Defective vision. Slight hyperopia.
 No glasses prescribed.
 Teeth repaired.
 Neurological report, June 20th, 1913: Actual age, 12 years; Binet measure 8.8.

CASE 68.

Male. 10 years. Native born.
 Irish descent. Examined December 18th, 1913.
 Defective vision: R. + 75s. + 75c. + 90. L. + 150s. + 75c. + 90.
 Glasses given: R. + 75c. + 90. L. + 75s. + 75c. + 90.
 Re-examined March 1, 1913.
 Refused to get glasses.
 No improvement.

CASE 69.

Male. 11 years. Native born.
 Russian descent. Examined January 15th, 1913.
 Defective vision.
 Slight hyperopia.
 No glasses prescribed.
 Defective teeth.
 Is a true imbecile.
 Always delicate. Had severe injury in head when 9 years old.

CASE 70.

Male. 10 years. Native born.
 American descent. Examined February 14th, 1913.
 Defective vision: R. + 2s. L. + 350s.
 Glasses prescribed and O. K.
 Re-examined April 3rd, 1913.
 Improvement in all visual work.
 Otorrhoea. Defective teeth repaired.

CASE 71.

Male. 7 years. Native born.
 Irish descent. Examined November 27th, 1913.
 Defective vision: R. + 2s. L. + 1s.
 Glasses prescribed: R. + 1.50s. L. + 50s.
 Glasses O. K.
 Blocked nasal respiration.
 Defective teeth.
 No improvement noted.

CASE 72.

Female. 14 years. Native born.
 Russian descent. Examined December 4th, 1912.
 Defective vision.
 Cataract in both eyes.
 Operated for tonsils and adenoids.
 Teeth repaired.
 Glasses prescribed: O. U. 3.50.
 Glasses O. K.
 Re-examined April 10, 1913.
 Improvement in all visual work.

CASE 73.

Male. 10 years. Native born.
 Italian descent. Examined February 6th, 1913.
 Defective vision: R. + 3.50s. + 1c. + 100. L. + 2.50s. + .50c. + 90.
 No improvement noted.

CASE 74.

Female. 9 years. Native born.
 Austrian descent. Examined December 31, 1912.
 Defective vision: R. + 70c. a + 5. L. + 50c. a + 180.
 Refused to procure glasses. No improvement.

CASE 75.

Male. 13 years. Native born.
 Austrian descent. Examined December 31, 1912.
 A true imbecile and not reliable.
 Cases 74 and 75 are brother and sister.

CASE 76.

Female. 9 years. Native born.
 German descent. Examined November 27th, 1912.
 Defective vision: O. U. + 1s. + 50c. + 90.
 Glasses given: O. U. + .50s + 50c. + 90.
 Glasses O. K. Improvement in visual work.
 Spinal curvature.
 Defective speech.

CASE 77.

Male. 8 years. Native born.
 Russian descent. Examined January 28th, 1913.
 Defective vision: R. + 250s. + 25c. + 90. L. + 250s. + 25c. + 90.
 Glasses given: R. + 1s. + 25c. + 90. L. + 1s. + 25c. + 90.
 Teeth repaired.
 Pedagogical report, May 20, 1913: Sulky, bad tempered and highly nervous without glasses. With glasses, calm and well behaved.
 June 20, 1913: Neurological report: A moron.

CASE 78.

Male. 11 years. Native born.
 American descent. Examined January 10th, 1913.
 Defective vision: O. U. 2.50s.
 Glasses given: + 1.75.
 Glasses O. K.
 Tonsils and adenoids removed.
 No improvement.
 True imbecile.

CASE 79.

Female. 12 years. Native born.
 Hungarian descent. Examined January 10th, 1913.
 Defective vision: R. + 250s. + 75c. + 95. L. + 3s. + 50c. + 85.
 Glasses given: R. + 150s. + 75c. + 95. L. + 2s. + 50c. + 85.

Glasses O. K.
 Defective hearing—otorrhoea.
 Defective teeth.
 No improvement.

CASE 80.

Male. 13 years. Native born.
 Italian descent. Examined February 5th, 1913.
 Defective vision: O. U. —50s.
 Glasses prescribed and O. K.
 Re-examined April 21, 1913.
 Had constant headache before wearing glasses; no headache now.
 Pedagogical improvement in all branches.

CASE 81.

Male. 12 years. Native born.
 Italian descent. Examined January 23rd, 1913.
 Vision test of no avail. Low grade imbecile.
 Defective teeth.
 Institutional case.

CASE 82.

Male. 9 years. Native born.
 Irish descent. Examined January 17th, 1913.
 Defective vision: R. + 1.50s. L. + 1.75.
 Glasses given: R. + 1s. L. + 1.25s.
 Glasses O. K.
 Re-examined Feb. 11, 1913.
 Could not read before getting glasses; now reads well and is about ready to go into a regular grade.

CASE 83.

Male. 14 years. Native born.
 Irish descent. Examined February 5th, 1913.
 Defective vision: O. U. + 1.25s.
 Glasses given: O. U. + .75s.
 Glasses O. K.
 Re-examined April 21, 1913.
 Improvement in number work, reading and copying.
 Neurological report: Normal, and should be tried in regular grade work.

CASE 84.

Male. 12 years. Native born.
 Russian descent. Examined February 14th, 1913.
 Defective vision: R. + 250c. + 90. L. + 250c. + 90.
 Glasses prescribed as above and O. K.
 Defective teeth repaired.
 Malnutrition.
 Constitutional treatment.
 Re-examined March 16, 1913.
 Improvement in all visual work, especially in number work.
 April 20, 1913: Improvement progressive.

CASE 85.

Female. 13 years. Native born.
 Irish descent. Examined February 18th, 1913.
 Defective vision: R. O. U. 2s.
 Glasses given: O. U. 1.50s.
 Improvement in all visual work.

CASE 86.

Male. 11 years. Native born.
 German descent. Examined January 13th, 1913.
 Defective vision: O. U. + 3.50s.
 Glasses given: O. U. + 2s. Glasses O. K.
 Defective teeth repaired.
 No improvement.

CASE 87.

Female. 11 years. Native born.
 German descent. Examined November 27th, 1912.
 Defective vision: R. + 3c. + 45. L. + 1s. + 2c. + 1.50.
 Glasses O. K.
 Re-examined. Concentration better, temper improved.
 Neurological diagnosis: Mongolism imbecile. Institutional case.

CASE 88.

Male. 7 years. Native born.
 Russian descent. Examined January 29th, 1912.
 Defective vision: R. + 75s. L. + 150.
 Glasses prescribed and O. K.
 Defective teeth repaired.
 Re-examined March 2, 1913.
 Improved in conduct, writing and reading.
 April 28th, 1913: Continued improvement in all class work; reading, writing and arithmetic. Better interest, brighter.

CASE 89.

Male. 12 years. Native born.
 American descent. Examined December 23rd, 1913.
 Defective vision: O. U. + 3s.
 Glasses given: + 1.75s.
 Glasses O. K.
 Re-examined Feb. 5, 1913.
 Improved in all class work.

CASE 90.

Male. 9 years. Native born.
 German descent. Examined December 17th, 1912.
 Defective vision: R. -6.50s. -125c. + 90. L. -5s. -125c. + 90.
 Glasses prescribed and O. K.
 Re-examined February 5th, 1913.
 Class work much improved.
 Child more comfortable.
 Neurological report: Child normal.

CASE 91.

Male. 13 years. Native born.
 German descent. Examined January 8th, 1913.
 Defective vision: R. + 1s. + 50c. + 90. L. + 1s. + 50c. + 90.
 Glasses given: O. U. -25s. + 50c. + 90.
 Glasses O. K.
 No improvement in class work.

CASE 92.

Male. 14 years. Native born.
 Bohemian descent. Examined January 8th, 1913.
 Defective vision: O. U. + 50s.
 Enlarged tonsils and adenoids operated.
 Glasses O. K.
 No improvement.

CASE 93.

Female. 12 years. Native born.
 German descent. Examined December 13th, 1912.
 Defective vision: O. U. + 75s. + 75c. + 90.
 Glasses given: O. U. + 25s. + 75c. + 90.
 Very much undersized.
 Glasses O. K.
 Re-examined Feb. 1, 1913.
 Teacher reports some improvement; more quiet and attentive.

CASE 94.

Male. 10 years. Native born.
 American descent. Examined February 13th, 1913.
 Defective vision: R. + 75c. + 10s. L. + 75c. + 90.
 Glasses O. K.
 Re-examined April 3, 1913.
 Improvement in all visual work.
 May 6, 1913: Improvement continued.

CASE 95.

Female. 13 years. Native born.
 Irish descent. Examined February 24th, 1913.
 Defective vision: R. + 3s. L. + 3.50s.
 Glasses given: R. + 2s. L. 2.50s.
 Glasses O. K.
 Enlarged tonsils and adenoids removed.
 Defective teeth repaired.
 Re-examined March 17, 1913: Very much improved in writing.
 Re-examined March 20, 1913: Improved in all class work; concentrated and interested.
 Re-examined May 6, 1913: Improvement continues; will be promoted to regular grade.
 Neurological report: Actual age, 13 years; Binet standard, 9.6. Mentally normal

CASE 96.

Male. 13 years. Native born.
 American descent. Examined February 18th, 1913.
 Defective vision: R. + 1s. + .25c. + 180. L. + 50s. + .50c. + 180.
 Given glasses: R. + 50s. + .25c. + 180. L. + 50c. + 180.
 Glasses O. K.
 No improvement noted.

CASE 97.

Male. 15 years. Born in Russia.
 Russian descent. Examined December 12th, 1912.
 Defective vision: R. — 75c. + 105. L. — 75s.
 Glasses O. K.
 Habit mouth-breather; no nasal block.
 Re-examined May 24, 1913: No improvement.

CASE 98.

Female. 8 years. Native born.
 Russian descent. Examined November 27th, 1912.
 Defective vision: R. + 1s. + 50c. + 90. L. + 50s. + 50c. + 90.
 Given glasses: R. + 50s. + 50c. + 90. L. + 50c. + 90.
 Glasses O. K.
 Enlarged tonsils and adenoids removed; teeth repaired.
 No improvement.
 Neurological report: Idiopathic imbecile.

CASE 99.

Male. 12 years. Native born.
 American descent. Examined January 29th, 1913.
 Defective vision: R. + 4s. L. + 2.50s.
 Given glasses: R. + 2.50s. L. + 1.50s.
 Glasses O. K.
 Nasal block.
 No improvement.
 Neurological report: Institutional case.

CASE 100.

Male. 10 years. Native born.
 German descent. Examined December 9th, 1912.
 Defective vision.
 Glasses given: R. + 1s. + 50c. + 90. L. + 2s.
 Glasses O. K.
 Converging strabismus.
 Re-examined January 2, 1913: Teacher reports "much improved in class work."
 Defective teeth; tuberculous.
 Re-examined January 17, 1913: Improved greatly in reading, writing and number work.

CASE 101.

Female. 8 years. Native born.
 Russian descent. Examined December 4th, 1912.
 Defective vision: R. + 450s. + 50c. + 90. L. + 3s. + 50c. + 90.

Glasses given: R. + 3.50s. + 50c. + 90. L. + 2.50s. + 50c. + 90.

Defective teeth repaired.

Re-examined Jan. 4, 1913: Improved in effort and ambition.

Re-examined April 10, 1913: Improvement continues; reads well and works well.

CASE 102.

Male.

11 years.

Native born.

American descent.

Examined January 13th, 1913.

Defective vision: R. + 1.25s. + 25c. + 180. L. + 1.25s. + 25c. + 180.

Glasses given: R. + 50s. + 25c. + 180. L. + 50s. + 25c. + 180.

Glasses O. K. Read 20-15.

Re-examined March 15, 1913. Reads better, more quiet and ambitious.

CASE 103.

Female.

11 years.

Native born.

German descent.

Examined November 27th, 1912.

Defective vision: R. + 1.75c. + 40. L. + 1.50c. + 150.

Glasses O. K.

Nasal blocked; spinal curvature; defective teeth; chorea.

Re-examined: More comfortable and studious.

Neurological diagnosis: Imbecile. Has been mentally backward from birth.

CASE 104.

Male.

13 years.

Native born.

German descent.

Examined December 11th, 1912.

Defective vision.

Wearing: R. + 4s. L. + 5s. + 3c. + 95.

Shadow test shows refractive error: R. + 7.50s. L. + 6s. + 4c. + 95. Glasses O. K.

Defective hearing and defective teeth.

Chronic catarrhal pharyngitis.

Glasses again prescribed: R. + 5s. L. + 4.50s. + 3.75c. + 95.

Re-examined Jan. 15th, 1913: Writes much better.

Feb. 15th, 1913: Improving in all branches but marked improvement in writing.

March 27th, 1913: Continues to improve.

CASE 105.

Male.

14 years.

Native born.

German descent.

Examined December 13th, 1912.

Defective vision: O. U. + 1s.

Glasses given: O. U. + 50s. Glasses O. K.

Divergent strabismus.

Re-examined Jan. 22, 1913.

No pedagogical improvement.

CASE 106.

Male.

13 years.

Native born.

American descent.

Examined December 12th, 1913.

Defective vision: R. + 75c. + 180. L. + 25c. + 180.

Glasses given for above and O. K.

Defective teeth.

Re-examined Dec. 26, 1912, and Jan. 31, 1913. No improvement.

Discharged from school.

CASE 107.

Male. 10 years. Native born.
 German descent. Examined February 25th, 1913.
 Defective vision: R. + 4s. + 15oc. + 90. L. + 5s. + 5c. + 90.
 Glasses given: R. + 25os. + 15oc. + 90. L. + 35os. + 50c. + 90. Glasses O. K.
 Re-examined March 20, 1913: Great improvement in all class work. Dormant
 faculties have been greatly activated since wearing glasses. Great improvement
 in number work and continued improvement in all branches.

CASE 108.

Female. 12 years. Native born.
 German descent. Examined January 28th, 1913.
 Defective vision.
 Slight hyperopia. No glasses needed.
 Defective teeth.
 Very low grade of mentality; unresponsive; no improvement; institutional case.

CASE 109.

Female. 10 years. Hungary
 Hungarian descent. Examined January 10th, 1913.
 Defective vision: R. + 1.50s. + 2c. + 90. L. + 2s.
 Glasses given: R. + 75s. + 2c. + 90. L. + 1.25s. Glasses O. K.
 Re-examined April 11, 1913: Improvement in all class work. Case normal.

CASE 110.

Female. 11 years. Native born.
 American descent. Examined January 28th, 1913.
 Defective vision: R. + 50s. + 50c. + 90. L. + 75s. + 50c. + 90.
 Glasses Given: O. U. + 50c. + 90. Glasses O. K.
 Defective teeth repaired.
 Re-examined April 22, 1913. Much brighter and improvement in writing.

CASE 111.

Male. 8 years. Native born.
 Bohemian descent. Examined January 2d, 1913.
 Defective vision: R. + 1.50s. + 50c. + 90. L. + 1.50s. + 1c. + 90.
 Given glasses: R. + 1s. + 50c. + 90. L. + 1s. + 1c. + 90. Glasses O. K.
 Child is not comfortable with glasses but parent refuses a retest. No improvement.

CASE 112.

Male. 15 years. Native born.
 American descent. Examined February 3rd, 1913.
 Defective vision: R. + 2s. L. + 1s.
 Tuberculous.
 Defective teeth.
 General treatment.
 Re-examined March 29, 1913: No improvement; institutional case.

CASE 113.

Male. 10 years. Native born.
 German descent. Examined January 16th, 1913.
 Defective vision: R. + 50c. + 180. L. + 25s. + 50c. + 180.

Glasses prescribed as above. Glasses O. K.

Re-examined Feb. 11, 1913: Improvement in all branches, especially in arithmetic.

March 10th, 1913: Can do regular class work.

May 8th, 1913: Improvement continues.

CASE 114.

Female. 7 years. Native born.

German descent. Examined January 24th, 1913.

Defective vision: O. U. + 50s. Glasses O. K.

Re-examined: Very low mental grade but has improved in reading, writing, sewing and copying.

Neurological report: A moron.

CASE 115.

Male. 11 years. Native born.

Italian descent. Examined January 21st, 1913.

Defective vision: R. + 1.25s. + 50c. + 105. L. + 1.50s. + 50c. + 105.

Glasses given: R. + 50s. + 50c. + 105. L. + 75s. + 50c. + 105.

Defective teeth; no treatment.

No improvement; parents inert.

CASE 116.

Male. 7 years. Native born.

Italian descent. Examined December 3rd, 1912.

Defective vision: O. U. + 1.50s.

Glasses given: O. U. + 1.50s.

No improvement; low grade mentality.

CASE 117.

Male. 13 years. Native born.

Italian descent. Examined January 9th, 1913.

Defective vision: O. U. + 4.50s.

Glasses given: O. U. + 3s. Glasses O. K.

Teeth repaired.

No improvement; parents inert; low grade of mentality.

CASE 118.

Male. 15 years. Native born.

Irish descent. Examined January 31st, 1913.

Defective vision: R. + 1s. + 50c. + 90. L. + 1s. + 50c. + 90.

Given glasses: R. + 50s. + 50c. + 90. Glass O. K.

Teeth repaired.

June 18, 1913. Neurological report: Idiot.

CASE 119.

Male. 14 years. Native born.

German descent. Examined February 13th, 1913.

Defective vision: O. U. + 1s.

Glasses given: O. U. + 50s. Glasses O. K.

Nutritional treatment; teeth repaired.

No improvement in studies; low mental type.

CASE 120.

Male. 14 years. Native born.
 Irish descent. Examined February 25th, 1913.
 Defective vision: O. U. + 1.50s. + 50c. + 100. L. + 90. Glasses O. K.
 No improvement.
 Teeth repaired.
 Home conditions—below average.

CASE 121.

Male. 8 years. Native born.
 American descent. Examined January 28th, 1913.
 Defective vision: R. + 1s. + 50c. + 95. L. + 1s. + 75c. + 85.
 Glasses given: R. + 50s. + 50c. + 95. L. + 50s. + 75c. + 85. Glasses O. K.
 Binet test: Coefficient .8.
 Neurological report: Mentally deficient; no improvement.

CASE 122.

Female. 8 years. Native born.
 German descent. Examined January 20, 1913.
 Malnutrition; endocarditis. Given general construction treatment.
 No mental improvement. A weak, delicate child.

CASE 123.

Female. 14 years. Native born.
 American descent. Examined November 27th, 1912.
 Defective vision: O. U. + 3s.
 Glasses given: O. U. + 2s. Glasses O. K.
 No improvement in class work: low mental grade.

CASE 124.

Male. 12 years. Native born.
 Russian descent. Examined January 15th, 1913.
 Defective vision: R. + 4s. + 50c. + 90. L. + 5s. + 75c. + 90.
 Glasses given: R. + 2.50s. + 50c. + 90. L. + 3s. + 75c. + 90. Glasses O. K.
 Re-examined April 10, 1913. Improved in class work.
 May 8, 1913: Improved in reading and writing. Child seems normal with awakening of dormant faculties since adjustment of glasses.

CASE 125.

Male. 9 years. Native born.
 Italian descent. Examined November 27th, 1912.
 Defective vision: R. + 2s. + 50c. + 90. L. + 2s. + 25c. + 90.
 Enlarged tonsils and adenoids.
 Glasses given as above.
 Adenoids and tonsils removed.
 Teeth repaired.
 Re-examined March 28th, 1913: Much improved in class work; more quiet and attentive; interested; better reading and writing.
 Ready for promotion to regular grade.

CASE 126.

Male. 9 years. Native born.
 German descent. Examined November 27th, 1913.
 Defective vision: O. U. + 2s.
 Glasses given: O. U. + 1.50s. Glasses O. K.
 A stutterer.
 Teeth repaired.
 No improvement.
 Probably true imbecile.

CASE 127.

Male. 10 years. Native born.
 Russian descent. Examined December 20th, 1912.
 Defective vision: R. + 4.50s. + 2c. + 45. L. + 3s. + 1.50c. + 155.
 Glasses given: R. + 3s. + 2c. + 45. L. + 2s. + 1.50c. + 155.
 Defective teeth repaired.
 Blocked nasal respiration.
 Tonsils and adenoids removed.
 Re-examined Jan. 20, 1913: Sees board better.
 Re-examined March 10, 1913: Very much improved in all class work. Promoted to regular grade.
 April 17, 1913: Since operation and adjustment of glasses has passed Binet test above age and has progressed from 1A work to 3A work in class and doing excellent work.

CASE 128.

Female. 11 years. Native born.
 Hungarian descent. Examined January 17th, 1913.
 Defective vision: R. + 1.50s. L. + 1.75s.
 Glasses given: R. + .75s. L. + 1s.
 Glasses O. K.
 Teeth repaired.
 March 18th, 1913. Much improved in all class work.
 More responsive; is brighter in every way.
 Neurological report: Mentally normal.

CASE 129.

Female. 11 years. Native born.
 American descent. Examined February 20th, 1913.
 Defective vision: R. + 2s. L. + 1.50s.
 Glasses given as above. Glasses O. K.
 Re-examined March 4, 1913: Less restless.
 Re-examined March 20, 1913: Improved in writing, concentration and confidence.

CASE 130.

Male. 10 years. Native born.
 Irish descent. Examined January 2d, 1913.
 Defective vision: O. U. + 1.50s.
 Glasses given: O. U. + .75s. Glasses O. K.
 Troubled with headaches and tired feeling before adjustment of glasses. This has all gone since wearing glasses.

April 15th, 1913: No headaches and more ambitious. Much improved in all branches of class work.

May 20th, 1913: Continued improvement; headaches if glasses not worn; mentally normal.

CASE 131.

Male.	14 years.	Native born.
Irish descent.	Examined February 19th, 1913.	
Defective teeth.		
A true imbecile.		
Vision test not available.		

CASE 132.

Female.	10 years.	Native born.
American descent.	Examined February 13th, 1913.	
Defective vision: R. + 2.50c. + 105. L. + 50c. + 170.		
Glasses given as above. Glasses O. K.		
Malnutrition; constitutional treatment; no improvement; true imbecile.		

CASE 133.

Male.	14 years.	Native born.
American descent.	Examined December 12th, 1912.	
Shadow test not available; no glasses given.		
Hypertrophied tonsils and adenoids removed.		
Re-examined February 15, 1913. Promoted to regular grade.		
Neurological report: Mentally normal.		

CASE 134.

Male.	11 years.	Native born.
Russian descent.	Examined December 5th, 1912.	
Strabismus.		
Has glasses; O. K.		
No improvement; low grade mentality.		

CASE 135.

Male.	9 years.	Native born.
Russian descent.	Examined December 9th, 1912.	
Defective vision: O. U. + 50c. + 90.		
Glasses given as above. Glasses O. K.		
Re-examined Feb. 20, 1913: Improvement in all branches of work.		
April 10, 1913: Improvement continues in all branches of class work.		

CASE 136.

Male.	14 years.	Native born.
American descent.	Examined December 11th, 1912.	
Defective vision: R. — 450s. — 3c. + 110. L. — 250s.		
Given glasses above. Glasses O. K.		
Blocked nasal respiration; operated for adenoids and tonsils.		
Re-examined Jan. 15, 1913: Improvement in conduct.		
Re-examined Feb. 15, 1913: Improvement in all class work.		

NOTE.—Teacher not sure that improvement is due to glasses and operation although boy can do nothing without glasses.

March 27, 1913: Improvement continues. Neurological report: A moron.

CASE 137.

Male. 11 years. Native born.
 Russian descent. Examined January 27th, 1913.
 Defective teeth and hearing.
 Is a true mental defective.

CASE 138.

Female. 9 years. Native born.
 American descent. Examined January 6th, 1913.
 Defective vision: R. — 75s. + 3c. + 125. L. + 75s.
 Glasses given as above and O. K.
 March 18, 1913: Concentration improved and does much better class work.

CASE 139.

Male. 14 years. Native born.
 Hungarian descent. Examined January 6th, 1913.
 Defective vision: R. + 3s. L. + 3.5s.
 Glasses given: R. 2s. L. 2.50s. Glasses O. K.
 Teeth repaired.
 Feb. 18, 1913: Child seems comfortable with glasses on.
 May 20, 1913. More quiet; better concentration and steady improvement.

CASE 140.

Female. 12 years. Native born.
 Hungarian descent. Examined December 23rd, 1912.
 Defective vision: R. — 7. L. — 8.
 Given glasses: O. U. — 6. Glasses O. K.
 Flat feet; bronchitis.
 Special treatment.
 Re-examined April 17, 1913: Improvement in all visual work in class as sewing, reading, etc. Dusts and cleans better.

CASE 141.

Male. 13 years. Born in Germany.
 German descent. Examined January 9th, 1913.
 Defective vision: R. — 50c. + 180. L. — 25s. + 75 + 90.
 Glasses given as above.
 No improvement; mentality of very low grade.

CASE 142.

Male. 14 years. Native born.
 American descent. Examined February 5th, 1913.
 Defective vision: R. + 1s. + 37c. + 90. L. + 1.50s.
 Given glasses: R. + 25s. + 37c. + 90. L. + 50s.
 Glasses O. K.
 Re-examined April 21, 1913: Since wearing glasses has improved in reading, writing, arithmetic and in general physical health. Normal mentality.

CASE 143.

Male. 9 years. Native born.
 Italian descent. Examined December 14th, 1912.
 Defective vision: R. + 3.50s. L. + 3.00s.
 Given glasses: R. + 3s. L. + 2.50s.
 Glasses O. K.
 Divergent strabismus.
 Re-examined Feb. 26, 1913: Improving in reading, writing, number work and conduct.

CASE 144.

Male. 15 years. Native born.
 American descent. Examined January 31st, 1913.
 Defective vision: R. + 50s. L. + 50s. + 5c. + 180.
 Defective teeth.
 Glasses given as above; no improvement; low mental grade.

CASE 145.

Male. 9 years. Native born.
 German descent. Examined January 15th, 1913.
 No test possible for reliability; low mental grade.

CASE 146.

Male. 11 years. Native born.
 Russian descent. Examined January 6th, 1913.
 Defective vision: R. + 1s. L. + 1.25s.
 Given glasses: R. + 50s. L. + 75s. Glasses O. K.
 Blocked nasal respiration; no improvement; institutional case.

CASE 147.

Female. 6 years. Native born.
 American descent. Examined February 18th, 1913.
 Defective vision: O. U. + 1.50s.
 Given glasses: + 75c.
 Endocarditis.
 No improvement.

CASE 148.

Male. 12 years. Native born.
 German descent. Examined December 18th, 1912.
 Convergent strabismus: O. U. + 1s. + 25c. + 90.
 Given glasses: O. U. + 50s. + 25c. + 90. Glasses O. K.
 Defective teeth.
 Teeth repaired.
 No improvement.

CASE 149.

Male. 12 years. Native born.
 Russian descent. Examined December 3rd, 1912.
 Defective vision: R. + 25s. + 75c. + 90. L. + 1.50c. + 90.
 Glasses given as above and found O. K.
 Re-examined April 10, 1913: Improved in reading and attention. Mentally seems normal but retarded.

CASE 150.

Male. 12 years. Native born.
 German descent. Examined December 17th, 1912.
 Defective vision: O. U. + 50s.
 Glasses O. K.
 No improvement; low mental grade.

CASE 151.

Male. 10 years. Native born.
 Russian descent. Examined December 27th, 1912.
 Defective vision: O. U. + 1.50s.
 Given glasses: O. U. + 75s. Glasses O. K.
 Defective teeth repaired; given constitutional treatment; no improvement; low mental grade.

CASE 152.

Female. 15 years. Native born.
 Bohemian descent. Examined January 3rd, 1913.
 Defective vision.
 Slight hyperopia.
 No glasses prescribed.
 No improvement.

CASE 153.

Male. 12 years. Native born.
 German descent. Examined January 9th, 1913.
 Defective vision.
 Hyperopia.
 Has glasses which are O. K.
 No improvement; low mental grade.

CASE 154.

Male. 11 years. Native born.
 Irish descent. Examined January 16th, 1913.
 Defective vision: R. + 3s. L. + 4s.
 Given glasses: R. + 2s. L. + 2.50s. Glasses O. K.
 Teeth repaired; no improvement.

CASE 155.

Female. years. Native born.
 German descent. Examined November 27th, 1912.
 Defective vision: O. U. 5s.
 Glasses given for above and O. K.
 Re-examined April 16, 1913.
 Neurological report: Institutional case.
 No pedagogical improvement.

CASE 156.

Male. 9 years. Native born.
 Italian descent. Examined November 27th, 1912.
 Defective vision: R. + 3.50s. L. + 3s.
 Given glasses: R. + 3s. L. + 2.50s. Glasses O. K.
 Teacher reports: "Better control; quieter since wearing glasses."

CASE 157.

Male. 11 years. Native born.
 Swedish descent. Examined February 24th, 1913.
 Defective vision: R. + 150s. + 50c. + 180. L. + 1.75s. + 50c. + 180.
 Given glasses: R. + 75s. + 50c. + 180. Glasses O. K.
 Enlarged tonsils and adenoids removed.
 Teeth repaired.
 No improvement in class work.

CASE 158.

Male. 16 years. 5 years in U. S.
 Bohemian descent. Examined January 10th, 1913.
 Defective vision: O. U. 1s.
 Given glasses: .50s. Glasses O. K.
 Teeth repaired.
 Re-examined March 15, 1913: No improvement in class work; has few headaches.

CASE 159.

Male. 14 years. Native born.
 German descent. Examined January 3rd, 1913.
 Defective vision: R. + 1.25s. + 75c. + 90. L. + 1.75s. + 75c. + 95.
 Given glasses: R. + 75s. + 75c. + 90. L. + 1s. + 75c. + 90.
 Glasses O. K.
 Teeth repaired.
 No improvement in class work.

CASE 160.

Male. 10 years. Native born.
 American descent. Examined February 1st, 1913.
 Defective vision: R. + 50s. + 50c. + 95. L. + 1s.
 Given glasses: R. + 50s. + 95. L. + 50s.
 Enlarged tonsils and adenoids removed.
 Teeth repaired.
 No improvement in class work.

CASE 161.

Male. 15 years. Native born.
 German descent. Examined January 9, 1913.
 Defective vision: R. — 3s. L. — 3.50s.
 Glasses given for above and O. K.
 Defective teeth repaired.
 Endocarditis.
 Re-inspected April 11, 1913: Improved in class work; can copy matter from blackboard.

CASE 162.

Female. 9 years. Native born.
 Russian descent. Examined January 20th, 1913.
 Blocked nasal respiration; defective teeth; malnutrition.
 Under constitutional treatment.
 No improvement in work.

CASE 163.

Male. 9 years. Native born.
 Hungarian descent. Examined January 17th, 1913.
 Defective vision: R. + 1s. L. + 2.50s. + 1c. + 75c.
 Given glasses: R. + .50. L. + 1s. + 1c. + 75. Glasses O. K.
 Re-examined Feb. 10, 1913: Can read matter on board.
 Re-examined May 14, 1913: Is not comfortable with glasses; on retest cannot improve glasses.

CASE 164.

Male. 8 years. Native born.
 Italian descent. Examined February 18th, 1913.
 Defective vision: O. U. + .50c. a + 180.
 Given glasses: O. U. + .50c. a + 180.
 Tonsils removed.
 No improvement.

CASE 165.

Male. 14 years. Native born.
 Italian descent. Examined February 18th, 1913.
 Defective vision: O. U. + 2s.
 Given glasses: O. U. + 1s. Glasses O. K.
 Tonsils removed.
 No improvement.

CASE 166.

Male. 8 years. Native born.
 Italian descent. Examined January 27th, 1913.
 Defective vision: R. + 3.50c. + 90. L. + 4c. + 90.
 Glasses prescribed: R. — .50s. + 3c. + 90. L. — .25s. + 3.50c. + 90.
 Glasses O. K.
 Re-examined April 28, 1913: Great improvement in all class work. Could not read before glasses worn, now reads B reader; also improvement in writing and number work. Particular improvement in co-ordination. Previously was very uncertain in all his movements. Could not play any games such as catching a ball; now is quite capable to play baseball.
 Re-examined May 20, 1913: Improvement continues.

CASE 167.

Male. 14 years. Native born.
 Italian descent. Examined February 6th, 1913.
 Defective vision: R. + 4s. L. + 2.50s. + 75c. + 1.20.
 Glasses prescribed: R. + 3s. L. + 1.50s. + 75c. + 1.80. Glasses O. K.
 Has chronic endocarditis.
 Re-examined March 29, 1913: Improved in reading.
 Re-examined April 28, 1913: Improved in all class work.

CASE 168.

Female. 13 years. Native born.
 German descent. Examined February 24th, 1913.
 Defective vision: R. + 3s. + 1.50c. + 60. L. + 3s. + 2c. + 130.

Glasses prescribed: R. + 2s. + 1.50c. + 60. L. + 2s. + 2c. + 1.30.

Has converging strabismus.

Glasses O. K.

Re-examined March 20, 1913. Less restless.

Re-examined May 6, 1913: Strabismus corrected; slight improvement in class work.

CASE 169.

Male. 9 years.

Native born.

Italian descent.

Examined December 6th, 1912.

Mouth breather but has no obstruction.

Defective vision: R. + 2s. + 75c. + 1.80. L. + 1.50s. + 50c. + 1.60.

Given glasses: R. + 1.25s. + 75c. + 1.80. L. + .75s. + 50c. + 1.60.

Re-examined Feb. 15, 1913: Improving. Could not read before the glasses were given; is now reading very slowly and doing some number work and writing.

CASE 170.

Female. 15 years.

Native born.

Italian descent.

Examined December 27th, 1912.

Defective vision: R. + 3c. + 90. L. + 2.50c. + 100.

Glasses given as above. Glasses O. K.

Enlarged tonsils removed.

Diverging strabismus

Re-examined January 15, 1913: Improved in writing and moves about with more confidence.

Neurological report: Institutional case.

CASE 171.

Male. 14 years.

Native born.

Irish descent.

Examined February 14th, 1913.

Defective vision: R. + 1c. + 1.25. L. + 1c. + 45.

Glasses O. K.

Under-nourished; chorea. Given constitutional treatment.

Re-inspected April 10, 1913: Improved in reading and writing since wearing glasses.

Re-examined April 15, 1913: Improved in all visual work, especially writing.

Re-examined May 6, 1913: Improvement continues, especially in reading and writing

CASE 172.

Female. 14 years.

Native born.

U. S. descent.

Examined January 24th, 1913.

Hyperopia.

Defective teeth.

Low mental grade.

CASE 173.

Male. 10 years.

Native born.

Bohemian descent.

Examined December 20th, 1912.

Defective teeth.

Parents tuberculous.

Low mental grade.

CASE 174.

Male. 13 years. Native born.
 U. S. descent. Examined December 23rd, 1912.
 Defective vision: R. + 1.25s. L. + 1s.
 Wearing glasses which are O. K.
 Did not walk until four years old.
 Low mental grade; no improvement.

CASE 175.

Male. 12 years. Native born.
 Italian descent. Examined January 3rd, 1913.
 Slight hyperopic; astigmatism; true mental defective.

CASE 176.

Female. 10 years. Native born.
 U. S. descent. Examined January 7th, 1913.
 Defective vision: R. + .50s. L. + 1s.
 Glasses given for above and O. K.
 Low mental grade; no improvement.

CASE 177.

Male. 14 years. Native born.
 Italian descent. Examined March 18th, 1913.
 Defective vision: L. + 4.50.
 Given glasses: L. + 35.
 Enlarged tonsils and adenoids removed.
 Defective teeth; no improvement.

CASE 178.

Male. 6 years. No further history.
 Unable to examine. Mental state of very low grade.

CASE 179.

Female. 16 years. Native born.
 Italian descent. Examined January 23rd, 1913.
 Defective vision: R. + 1.75 + 5c. + 105. L. + 2s. + 5c. + 75.
 Given glasses: R. + 1s. + 4c. + 105. L. + 1s. + 4c. + 75. Glasses O. K.
 Defective teeth.
 Mentality of very low grade; no improvement.

CASE 180.

Female. 13 years. Native born.
 Irish descent. Examined March 27th, 1913.
 Wearing glasses and O. K.
 Defective teeth.
 No improvement.

CASE 181.

Male. 14 years. Native born.
 U. S. descent. Examined January 27th, 1913.
 Very low mental grade; cannot be examined.

CASE 182.

Male. 8 years. Native born.
 Italian descent. Examined December 3rd, 1912.
 Hypertrophied tonsils and adenoids removed.
 Very low mental grade; no improvement.

CASE 183.

Male. 12 years. Native born.
 German descent. Examined December 16th, 1912.
 Defective vision: R. + 1.25s. + 25c. + 90. L. + 1.50s. + 50c. + 90.
 Glasses prescribed: O. U. + 50s. + 25c. + 90. Glasses O. K.
 Teeth repaired.
 Re-examined Feb. 15, 1913: Improving in all school work.

CASE 184.

Male. 8 years. Native born.
 Italian descent. Examined December 27th, 1912.
 Hyperopic astigmatism.
 Enlarged tonsils removed.
 Re-examined Jan. 5, 1913: No improvement.

CASE 185.

Male. 14 years. Native born.
 U. S. descent. Examined January 24th, 1913.
 Defective vision: R. — 2.50s — 3c. + 90. L. — 5s. Glasses O. K.
 Re-examined May 10, 1913: Very low mental grade.

CASE 186.

Male. 14 years. Native born.
 German descent. Examined December 11, 1912.
 Both eyes myopia; has proper glasses.
 Has chorea and stutters.
 Low mental grade; no improvement.

CASE 187.

Female. 15 years. Four years in U.S.
 Italian descent. Examined January 17th, 1913.
 Defective vision: O. U. + 1s.
 Glasses given: O. U. + 50s.
 No improvement.

CASE 188.

Male. 12 years. Four years in U. S.
 Italian descent. Examined February 17th, 1913.
 Defective vision: R. + 1.50s. L. + 1s.
 Given glasses: O. U. + .50s. Glasses O. K.
 No improvement.

CASE 189.

Male. 1— years. Native born.
 Bohemian descent. Examined December 23rd, 1912.
 Defective vision: R. + 1.75s. L. + 1.25s. + 1.75c. + 105.

Given glasses: R. + 1s. L. + 50s. + 1.75c. + 10s.

Glasses O. K.

Defective teeth; a true mental deficient.

CASE 190.

Female. 12 years. Native born.
Irish descent. Examined November 27th, 1912.
Hyperopic astigmatism; stutters; defective teeth.
No improvement.
True mental deficient.

CASE 191.

Male. 9 years. Seven years in O. S.
Russian descent. Examined December 13th, 1912.
Defective vision: R. + 1.50s. + 37c. + 90. Glasses O. K.
Teeth poor.
Re-inspected Feb. 4, 1913: Very much better attention.
Re-inspected March 15, 1913: Reads better; general awakening of intelligence.

CASE 192.

Male. 12 years. Native born.
U. S. descent. Examined January 6th, 1913.
Defective vision: R. + 2s. L. + 2.50s.
Given glasses: R. + 1s. L. + 1.50s. Glasses O. K.
Re-inspected April 21, 1913: Improvement in reading, writing, number work and physical condition.

CASE 193.

Male. 12 years. One year in U. S.
Bohemian descent. Examined December 20th, 1912.
Defective vision: R. + 3s. + 1c. + 90. L. + 2.50s. + 50c. + 90.
Given glasses: R. + 2s. + 1c. + 90. L. + 1.75s. + 50c. + 90. Glasses O. K.
Deaf in right ear.
Re-inspected Feb. 15, 1913: Improvement in visual work.
Re-inspected April 16, 1913: Improved in reading and copying work from board.

CASE 194.

Female. 6 years. Native born.
German descent. Examined December 27th, 1912.
Defective vision: O. U. + 1s.
Given glasses: + .50s. Glasses O. K.
Defective teeth; no improvement.

CASE 195.

Male. 9 years. Native born.
Italian descent. Examined December 27th, 1912.
Defective vision: O. U. + 3s.
Glasses given: O. U. + 2s.
Operated on for enlarged tonsils and adenoids; defective teeth and blocked nasal respiration.
Re-inspected Jan. 15, 1913: Improved in conduct.

CASE 196.

Female. 13 years. Ten years in U. S.
 French descent. Examined February 19th, 1913.
 Defective vision: O. U. — 2s. — 2c. + 180.
 Glasses O. K.
 No improvement.

CASE 197.

Male. 9 years. Native born.
 Italian descent. Examined November 27th, 1912.
 Defective vision: O. U. + 3s.
 Given glasses: O. U. + 2s. Glasses O. K.
 Defective teeth; blocked nasal respiration; operated on for adenoids and tonsils.
 Re-inspected June 6, 1913: Improved in conduct; more quiet and intelligent.

CASE 198.

Female. 8 years. Native born.
 U. S. descent. Examined December 19th, 1912.
 Defective vision: R. + 2.50s. + 50c. + 90. L. + 2.50s.
 Given glasses: R. + 1.75s. + 50c. + 90. L. + 1.75s. Glasses O. K.
 Defective teeth.
 Re-inspected Feb. 15, 1913: Greater concentration; is less nervous; low mental grade.

CASE 199.

Male. 12 years. Native born.
 German descent. Examined January 13th, 1913.
 Hyperopic astigmatism.
 Wears glasses and glasses O. K.
 Tonsils and adenoids removed.
 No improvement.

CASE 200.

Male. 15 years. Native born.
 Russian descent. Examined January 31st, 1913.
 Defective vision: R. + 1s. + 25c. + 95. L. + 1s. + 25c. + 85.
 Given glasses: R. + 50s. + 25c. + 95. L. + 50s. + 25c. + 85. Glasses O. K.
 Defective teeth; blocked nasal respiration.
 No improvement.
 Neurological report: Medium grade idiot.

CASE 201.

Male. 12 years. Native born.
 U. S. descent. Examined December 16th, 1912.
 Defective vision: R. + 75c. + 20. L. + 75c. + 155.
 Given glasses but not O. K.
 Defective teeth; no improvement.
 Re-inspected April 19th, 1913: Wearing glasses and O. K. Improvement in visual work; also reading and copying from the board.

CASE 202.

Male. 10 years. Native born.
 Russian descent. Examined December 6th, 1912.
 Defective vision: R. + 5.50s. + 1.50c. + 100. L. + 6.50s.
 Given glasses: R. + 2.50s. + 1.50c. + 100. L. + 2.50s. Glasses O. K.
 Mental state of very low grade.
 Defective teeth; no improvement.

CASE 203.

Male. 15 years. Native born.
 German descent. Examined February 18th, 1913.
 Enlarged tonsils and adenoids not removed.
 No improvement.

CASE 204.

Male. 13 years. Five years in U. S.
 German descent. Examined December 20th, 1912.
 Bad teeth and under-nourished.
 No improvement noted.

CASE 205.

Male. 12 years. Native born.
 U. S. descent. Examined February 26th, 1913.
 Idiopathic imbecile.
 Institutional case.

CASE 206.

Male. 10 years. Five years in U. S.
 German descent. Examined December 13th, 1912.
 Defective vision: O. U. — 4s. — 75c. + 180.
 Idiopathic imbecile.

CASE 207.

Male. 13 years. Native born.
 German descent. Examined December 12th, 1912.
 Examination negative.
 No improvement.
 Idiopathic imbecile.

CASE 208.

Male. 12 years. Native born.
 Irish descent. Examined January 17th, 1913.
 Adenoids removed.
 No improvement.
 Very low mental grade.

CASE 209.

Male. 12 years. Native born.
 U. S. descent. Examined December 11th, 1912.
 Myopia astigmatism right eye.
 Hyperopic astigmatism left eye.
 Glasses O. K.
 No improvement.
 True imbecile.

CASE 210.

Female. 11 years. Native born.
 U. S. descent. Examined January 29th, 1913.
 Defective vision: R. + 1s. + 75c. + 90. L. + 1.75s. + 50c. + 90.
 Glasses were not obtained.
 Seems a true imbecile.

CASE 211.

Male. 9 years. Native born.
 Russian descent. Examined December 9th, 1912.
 Defective teeth.
 Defective vision: O. U. + .50s.
 No glasses given.
 True mental defective.

CASE 212.

Female. 9 years. Native born.
 U. S. descent. Examined December 6th, 1912.
 Mentality of very low grade.
 Enlarged tonsils.
 Slight hyperopia.
 No glasses prescribed.
 True imbecile.

CASE 213.

Female. 9 years. Native born.
 Russian descent. Examined December 6th, 1912.
 Irregular heart action.
 Defective vision: O. U. + .50s.
 No glasses required.
 True imbecile.

CASE 214.

Female. 13 years. Native born.
 German descent. Examined January 21st, 1913.
 Defective vision: O. U. + 1.25s.
 Given glasses: O. U. + .50s.
 Has right meplegia since 18 months old.
 Re-inspected May 8, 1913: Was not able to write at all before wearing glasses; now writes pretty well.
 Re-inspected June 8, 1913: Improvement in all visual work, especially writing.

CASE 215.

Female. 10 years. Native born.
 German descent. Examined December 27th, 1912.
 Defective vision: O. U. + 3s.
 Given glasses: O. U. + 2.50s. Glasses O. K.
 Converging strabismus; blocked nasal respiration; defective teeth.
 Tonsils removed when 5 years old.
 Neurological report: Mongolian idiot.
 Re-inspected March 25, 1913: Since wearing glasses strabismus has been relieved.
 Child is brighter and more responsive; some actual improvement in school work.

CASE 216.

Male.	9 years.	Native born.
U. S. descent.	Examined February 13th, 1913.	
Lack of muscular control.		
Constitutional treatment.		
No improvement.		

CASE 217.

Male.	12 years.	Native born.
Bohemian descent.	Examined January 7th, 1913.	
Slight hyperopic astigmatism.		
Glasses not needed.		
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In conclusion, it must be stated clearly:

1. Correction of physical abnormalities will not make a child normal mentally unless the child has mental potentiality.

2. That by far the greater number of children found in the classes for the mentally deficient are imbeciles and idiots of one type or another.

3. That altogether too many children are found in classes for mentally deficient whose intellectual faculties are merely dormant due to the physical abnormality of the facultative senses; and that when such abnormalities are corrected by applied proper therapeutics, this dormant potentiality is activated by the transmission of normal stimuli to the cerebrum.

4. That this awakening of cerebral functions is constant, continued and progressive according to the essential potentiality of each individual provided the individual is placed in an environment normal for its age.

5. The reclaiming of one single child from an ungraded class who otherwise may be doomed to a life of misery and irresponsibility, by proper examination would make this work absolutely necessary for adoption by all Departments of Education.

6. A Department of Education force is not complete unless it includes a Division of Mental and Physical Research.

A child is a whole composed of many parts and only as these component parts are truly attuned in themselves and to their environment do we obtain perfect harmony of life and living; therefore treat the child as a whole as special corrections cannot produce good.

DISCUSSION OF

JOHN J. CRONIN'S PAPER

BY

ELEANOR HOPE JOHNSON

I should like to make a plea for a clearer definition of an ungraded class. It seems to me this is a very important place for both observation and experiment. It is often impossible for the most experienced psychiatrist to be certain of mental defect at the first diagnosis. A period of observation is often greatly needed and the ungraded class is the natural place for such observation. In an ungraded class in one of the schools in my inspection district a little girl was placed who was moderately proficient in reading, but who was totally unable to handle figures. The diagnosis in her case was very uncertain. The teacher became interested and put all her emphasis on developing the child's number sense. Now she has been transferred to a regular grade and is progressing normally, which was the result the teacher had greatly hoped for. The ungraded class was exactly the place for her during this uncertain period.

Where children can be placed in the regular grades after such a time of special teaching so much more has been gained. Certainly many children who are properly placed in ungraded classes should not, for some time at least, be regarded as hopeless cases; their improvement and possible normality may at least be worked for.

CAN THE MENTALLY DEFECTIVE CHILD BE EDUCATED IN THE PUBLIC SCHOOLS?

BY

HELEN MACMURCHY

Before considering this subject we must acknowledge the debt of gratitude we owe to those who have established and taught special classes and special schools for mentally defective children. What has been done for the mentally defective children in our public schools has been done by them. What we know about the subject we have learned from them. It is with their assistance that we must now proceed to discuss this subject. Those who have had experience in teaching mentally defective children know best the principles on which such instruction must be based and realize its difficulty. They know too, the fascination of it, and its splendid contributions to psychology and to education. Above all, the teacher of the special class knows that permanent care of the mentally defective child all through its childhood, that is, all through its life, is not only the only way to educate the mentally defective, but the only way to prevent feeble-mindedness and to lift the burden of the feeble-minded from the home, the school, and the state.

What is a mentally defective child?

A mentally defective child is one who is not merely dull and backward, but is incapable on account of mental defect existing from birth or from an early age, of receiving proper benefit from the instruction given in an ordinary Public School.

What is a Public School?

A Public School is one which is established or approved by the State and maintained by public money, as taxes, rates, Municipal grants, Government grants, etc.

It is generally agreed

1. That in a democratic State all the children of all the people should be educated as the future citizens of such State.
2. That every child of every citizen has an equal right to such education.
3. That such education is provided by the State because it is deemed to be essential to the general good and for the public welfare that the State should do so.

We must now answer these questions:

1. Is the mentally defective child capable of education at all, and if so, of what form of education?

2. If capable of some form, or degree of education, has such child a right to such education, and if so, to what extent?

3. How, and in what institution should such education be given?

1. Is the mentally defective child capable of education, and if so, of what form of education?

Yes. Education develops all our powers, so as to make the most of them and us. It has been shown and by none more nobly than by your great fellow-countryman, Dr. Fernald of Waverly, that the physical powers of those whose mental age is two years or even less, are capable of training for useful work. There is a road at Waverly made under the direction of his master mind by the muscles of strong men whose minds were as the minds of babes. The man whose highest achievement is represented by picking up a big stone, carrying it so far and putting it down where he is told, is perhaps where the whole human race was once, somewhere near the beginning of its age-long history. And the secret of educating the mentally defective is simply to employ suitably all their powers. Given a superior and sympathetic mind as director the mentally defective can do almost anything that normal people can do. Almost without exception, the mentally defective can be trained; some of them can be educated so that they are valuable members of an institution staff. Almost without exception they can be made useful, and can do something towards earning their living. They can all be made happy, if they live in a permanent home. With few exceptions book learning is useless, and sometimes worse than useless for the mentally defective.

The education that profits them and helps the general welfare is industrial and practical. Train them to do things.

2. If capable of some form or degree of education has such child a right to education, and if so, to what extent?

Yes. To the utmost extent of the mentally defective child's powers, provided that this does not conflict with the public welfare. There must be some limit to the amount of money expended on the education of those who can make little or no return to the State for such expenditure.

3. How, and in what institution should such education be given?

No question arises about the education of mentally defective children whose parents have financial resources enabling them to provide for

such children from birth to death. They are permanently cared for and practically live alone with a companion and caretaker. This, of course, withdraws that companion from productive labor and to that extent is a loss to the community. It must not be forgotten moreover, that the mentally defective individual who is thus cared for is deprived of association with his peers and so loses the greatest means of development and happiness. (Illustrations.) So that many wise and wealthy parents have preferred to secure a permanent home under pleasant auspices in an institution for their mentally defective child, because this affords not only the best education and the greatest security, but also in the end the greatest happiness for all concerned.

The case is different with those citizens whose only chance of education is that afforded by the Public Schools.

Every child in a community should be registered on arrival in the community, whether that arrival be at birth or at any other period up to the legal age of leaving school and means should be taken to see that the child attends school for such legal period. This is necessary if public education enactments are to be anything but a dead letter. It must be done for the public welfare, and when it is done, we shall find a great many mentally defective children who have so far escaped observation.

The Public Schools are bound to afford an education to every child. If the child does not get on, fails in learning and understanding, and does not make satisfactory progress the Public Schools with the aid of the Medical Inspector of Schools and the School Nurse, should be able to tell us why. This child who does not get on must be given a second chance. If it is poor health, bad sight, defective hearing, stammering, syphilis, starvation, anaemia, fatigue, sitting up too late at nights, eating slate pencils, smoking cigars, drinking beer, wage earning before the time, tuberculosis, rheumatism, heart disease, adenoids, enlarged tonsils, repeated infections, or any other removable cause, let that cause be removed, so that the child may not lose his life, health and education, nor the State lose its time, its money, and its citizens. Such a backward child needs special attention in a small class by a special teacher, and if then the child can truly be classed as normal, how satisfactory the result. The State has gained a citizen, and the family has been spared a threatened grief and affliction. On the other hand, if this second chance with every removable obstacle removed and special attention given, only serves to show that the child is mentally defective, we must face the meaning of this fact.

Mental defect is not a removable cause of retardation in school. It is an irremovable cause of retardation. There is no cure for mental defect. The State must educate its future citizens. But the mentally defective are never citizens in any true sense, either present or future,

I do not say that they never vote. They do, early and often. Those who may have any doubt on that subject, should read Dr. Goddard's wonderful book, "The Kallikak Family"—a scientific record of what actually happened that answers, as it were, out of the Book of Judgment almost every question that one can ask about the mentally defective.

The mentally defective man may vote. But he never maintains himself, he never pays his way. He bears no part of the white man's burden. Nay, as unemployed and unemployable, incorrigibles, irresponsibles, paupers, slum-makers, vagrants, drunkards, prostitutes, thieves, incendiaries, prisoners, convicts, murderers, *they are the citizens' greatest burden*, a burden which nobody will ever lift from the decent citizen's back until he turns round and takes it off himself, which he will hastily do as soon as you and I can make him see that he can prevent all this folly, expense, misery and crime. What is the use of pretending that any mentally defective man or woman is grown up? He or she may have been born in 1873 which is forty years ago, but that fact does not give him or her any more sense than a child. Recognize this fact and act upon it, and you lift the citizen's heaviest burden. Why call the mentally defective thieves, murderers and other hard names? They are children—the State's neglected children, easier to manage than any other class, easier to make good and happy if we will only begin soon enough (namely, during school age), and as soon as they are shown to be mentally defective give them that permanent home, which is not only their necessity, but ours. Permanent care for the mentally defective is necessary for the public welfare and safety.

The mentally defective then, are not to be educated as future citizens. They are to be educated to make the best of them that we can, having regard for their rights, and for the rights of the whole citizen body, that is, to the general welfare of the State and for the public good.

If the parents are able to educate their own mentally defective children from birth to death, it is of course right that they should do so, but this does not mean that any mentally defective person, poor or rich, should be permitted to become a parent.

If the parents are not wealthy but must depend upon State education, then the public money or grant expended on the education and care of mentally defective children, should be *pro rata* not less than that expended for normal children, provided that such expenditure does not conflict with the public welfare.

Of what character then, should the Institution be where such care and education is provided for mentally defective children?

Is it the Public School?

The mental age of the idiot never advances to school age.

The mental age of the imbecile barely reaches school age.

The mentally defective child, like any other child, should have its name entered on the Public School register and should have every possible chance, and then after that a second chance to be proved of normal mentality. When any child is clearly proved to be mentally defective, such child must not remain with normal children. This is for his or her own good, for the good of the normal children, for the good of the teacher, and for the good of the community and for the public welfare. A special class is the place for children who are backward, or are physically defective but are normal mentally. Extra time and money spent on them to help them up to grade will well repay the State. But just as soon as we are sure and certain (and we should re-examine every six months, even after we are sure and certain) that we have a mentally defective child, how is it going to help the State to keep such a child in a special class? The State wants to remove the burden of the feeble-minded and to prevent feeble-mindedness. The State does not want to spend money to make mentally defective children more like normal children and therefore more dangerous to the community because the overwhelming danger to the community from mentally defective children is that before we have realized where we are they are prolific parents. The more they resemble normal persons, the more likely they are to become parents. It is bad enough to have to support vagabonds, paupers, thieves, and worse, but for modern citizens and their governments to give consent by silence while one feeble-minded man and woman add to our burden ten legitimate feeble-minded children and two illegitimate feeble-minded children (as is recorded in the books of a certain Juvenile Court), is a mode of inaction that cannot continue. It is not that these citizens and their governments are blind, dumb, deaf, and paralyzed. They are not even sleeping. They are only busy. And all that is necessary is to make them see that this business is their business and they will "get busy" at it.

Special classes in the Public Schools do not help to prevent feeble-mindedness and therefore we must find something more scientific as a permanent solution of this part of the problem of the feeble-minded.

Special classes have done a great deal. Those who have worked in them are entitled to our highest admiration and our deepest gratitude. They have taught us much, but those who have worked longest and know most about special schools are the ones who are now foremost in advising permanent care and a permanent home for all the feeble-minded. Special classes are an indispensable part of a modern school system. We must have them to cure retardation, to help on the backward, and to find the mentally defective. But their function for the mentally defective is that of a clearing house.

If then, the Public School cannot satisfactorily care for and educate

the mentally defective, either in the ordinary class or in the special class, where should such children be cared for and educated?

It would save money, abolish much misery, evil and crime, prevent much infant mortality and many slums, and it would help to purify the stream of national life, if we recognized our responsibility to those wards of the State when the servants of the State meet them first in the school-room. We should make up our minds what to do with our mentally defective children before they leave our schools.

They should be cared for and educated in a permanent residential home and school of the colony or village type.

This is a great gathering of citizens. From France and Germany, from Austria and Russia, from England and India, from Canada and New Zealand, we meet here to enjoy the hospitality of a great country, and a great people. If you were asked to prove your citizenship, how would you do it? The proofs might be as different as the languages you speak or the garments we wear; one has taught a school, another has healed the sick, a third has helped to make the laws. Here sit together those who have given sons and daughters to their country, or led a regiment, sailed a ship, planted a tree, explored a river, opened a road, discovered a secret, ploughed and sowed and reaped the field. And these others write our books, and sing our songs, and paint our pictures, and still Heaven sends us the prophet and the priest and the king. Nor are these all. The Nation is founded on the homes of its people. They are citizens, however humble, however unlearned, who can truly say, "I, with one or two more to help me, have made a home." The best definition I can frame for the mentally defective is that they cannot make nor help to make a home. Therefore, we must make a home for them. This is the solution and the only solution, not alone for the education of the mentally defective, which is after all but one part of the problem, but for the whole problem and burden of the feeble-minded.

If all our mentally defective children were during school age enabled to enter a permanent home, economically conducted and supported by private contributions, fees, Municipal grants, benevolent funds, taxes, rates, Government grants, bequests, etc., as well as by the labor of the inmates and the produce of the grounds provided (this Institution being open to Government inspection and the visitation of parents and friends), where under constant care and expert supervision, the most would be made of all their powers, physical, mental and spiritual, and they would be useful and happy and good instead of useless, miserable, and evil, we would incidentally save a great deal of money, and in the course of a generation the burden and reproach of the feeble-minded would fall off our backs and be no more.

There are some here who will live to see that day.

THE SUBNORMAL CHILD

BY

FRANCIS E. FRONCZAK

The average person on hearing the term "Subnormal Child" immediately thinks of an idiot, imbecile, or foolish child. The idea of this paper is to dispel the illusion and to discuss this subject in language that the masses may understand.

In looking over the definitions—What is a subnormal child—I found in literature on the subject that this condition under various synonyms, as "Subnormal," "Abnormal," "Defective," "Backward," "Feeble-minded," "Feeblegifted," "Retarded," and other names has been defined in over a hundred ways. Many of these I did not consider good definitions, either going too far or not far enough, and I propose a new one.

The subnormal child is one whose possibilities are deficient or defective through lack of adequate physical or mental development due to prenatal or postnatal conditions.

This is a so-called narrative definition describing the condition and its general causation. The normal child has certain potentials which are lacking or are undeveloped in the type of which I desire to speak. The subject is a very extensive one and in my paper I shall not touch upon the various classifications of feeble-mindedness, idiocy, or imbecility with its many varied gradations of high, middle or low, but just upon that type of subnormal child which is curable and can be made a useful member of the community. The other classes I leave to the psychologists and the experts on nervous and mental diseases who love to delve into the mysteries of this type.

The etiology of the conditions of subnormality of the child may be either prenatal or postnatal. Prenatal are such as malnutrition of the mother during pregnancy, intemperance of the parents, tuberculosis, syphilis, general bad health, and nervous and mental diseases—all causing faulty metabolism, lowering of vitality, lack of proper nutrition of all cells of the body, including the brain and nervous systems.

Postnatal conditions which cause subnormality may be various diseases such as Poliomyelitis (Infantile Paralysis), Meningitis, Scarlet Fever, Adenoids, Hypertrophied Tonsils, Bad Teeth, Bad Vision, Bad Hearing. Then come various accidents such as injuries to various parts of the body, but especially to the head, external conditions due to surroundings and circumstances, such as malnutrition due to under-

feeding, overfeeding and improper feeding, bad ventilation, late going to bed, early rising hours, too early school attendance, overwork due to study after school hours, living in bad dwellings and surroundings, bad companionship. Each and every one of these, and I could mention several pages more, may and does produce subnormal children. I shall discuss only some of these causes which can and should be removed thereby making a child which instead of developing into a community liability becomes a valuable community asset. The symptoms of most of these conditions are quite common. The child may be listless, pale, anæmic, fidgety, sometimes quite lively in play but not in school, morose, careless, highly sensitive, but above all does not go ahead in his class room. He is slow in understanding and learning, has a poor memory, and is absolutely backward in his work. At an age where a normal child does know certain things, can read and write, can do various problems, he is devoid of that knowledge. He takes no interest in the subjects taught, he appears slow and dull, he may be slovenly in his appearance, may suffer from frequent headaches, ocular neuralgia, sore throat, due to mouth breathing, has repeated failures in examination and is a class "repeater."

A thorough medical examination of the child will very often at once show the defect, will at once point to the fault which lies at the bottom of the entire subnormality of the child, the symptoms sometimes declaring themselves as to the cause. The investigation of the home, his companions, his playmates, of the class room, bring out the external causes of the backwardness and apparent feeble-mindedness and subnormality. In all these cases of which I speak the chances for complete recovery are most excellent. The treatment consists in the removal of the cause. If the subnormality is due to prenatal conditions, the treatment or correction may be rather difficult. The child of a phthisical parent we know may have a tendency to tuberculosis, his vitality may be lowered, but after removal from the tenement house or overcrowded condition, plenty of fresh air, sunshine, food and rest, the child need not develop tuberculosis, but become a healthy and robust boy or girl and later a useful man or woman.

The child of the drunkard need not become a drunkard, if the conditions and surroundings are changed.

If a child has been born physically underdeveloped, proper exercise may develop him, and special training may fit him for some useful occupation.

If the nervous structure is not up to the standard, diet, fresh air, exercise and well-timed rest may remake the child.

In conditions due to disease and accidents a very large percentage does well under proper treatment, medical, surgical or gymnastic.

If backwardness is due to external causes such as bad lighting, it can be corrected; the blackboard's position may be changed, proper lighting introduced; again ventilation may be improved, if that is the cause. If the same is artificial its failure may be due to the system, to proper installation, or to bad janitorship. All these can be corrected.

To bad ventilation, which is being discussed during this Congress, can be accredited a great number of this type of children. A room that smells like a laundry on Monday, temperature between 75 to 80 degrees F., or above, humidity sometimes equivalent to that of a Turkish bath, carbon dioxide rising far above that of the outside air, body emanations and smell that can be cut with an axe, all will tend to make a child sleepy, listless, apathetic, dopey. Correction here is quite plain: let in the fresh air, either by improving the system installed, or getting a janitor who will not block the air inlets and outlets or slow the fan because it causes more work in the engine room. The ventilating and sanitary engineers are looking after this part of the treatment and as soon as they give us perfect ventilation, a high percentage of the subnormals will become normal children. The ill-ventilated, windowless bedroom, the overheated and overcrowded tenement all give their share of subnormal children who can be cured if the physiological, physical and social conditions are corrected. A great wail and cry is being raised against factory and mill conditions. They are the causes of much disease, but there is no doubt that the bad ventilation, the overheating, the dust laden atmosphere of the school and the overcrowded curriculum, which we find in many of our schools, are just as guilty as the factory or the mill. Many of our truant children are simply truants because of such conditions as enumerated, and which can be found in schools, and the correction of these makes them well behaved and normal children.

Bad nutrition. How many of our school children are from this cause in the ungraded classes and in truant homes, candidates for the penitentiary and the prison and the executioner, for the houses of prostitution, the hospital and the insane asylums? Teach the mothers how to feed their children properly, not to underfeed or to overfeed them, not to stuff them with foods which are indigestible. An examination of Buffalo's schools some time ago showed that about 40% of our school children were underfed, overfed, or improperly fed. The Domestic Science teacher has a most extensive field and can aid the teachers of the defective and ungraded classes and render great service to the community by correcting the cooking and by teaching how the child should be nourished to develop into a perfect boy or girl and become a valuable and useful member of society instead of the contrary.

It is evident from this summary of the general status of the sub-

normal child that bad hygiene, or the gross neglect of hygiene is at the root of the evil. John Spargo, in his most sympathetic study of unfortunate children, says:

"I am satisfied that poor, defective nutrition lies at the root of physical degeneracy of the poor."

Dr. Kelynack, a leading authority on child welfare in England says: "Slum life does not cause feeble-mindedness, but it does cause retardation."

If these observations are true it follows that the improvement of the child who is physically or mentally retarded must begin in his own home. I have already suggested the lines along which this improvement must run, but the subject is very broad and would require hours or even days for thorough discussion. It is worthy of the most patient and practical study.

Improvement must not stop with the home but must be carried right on into the schools. When our school houses and grounds have become sanitary and hygienic, through the reforms that I have sketched elsewhere we shall find that the activities of the school can be so re-organized that they will accomplish more and better things to raise the physical and mental level of the child.

Leonard Ayres tells us in his research on "Laggards in Our Schools" that "Our courses of study as at present constituted are fitted not to the slow child or to the average child but to the unusually bright one."

If Ayres is right, then it is true that the slow child is trying to run a very uneven race in his progress through the grades. We can easily understand how it happens that six millions of our public school children, about one-third of the school population, are "retarded," while one-sixth of all our pupils are repeating the work that they have tried to do for one or more years past. These repeaters cost us 27 millions of dollars annually, and for all that they are a discouraged, dull, listless army of misfits. They are trying to learn too many subjects. They are urged by their teachers to go at a pace that is far too rapid for their mediocre abilities. They are flung out into the world with a very incomplete and fragmentary education, baffled and discouraged at the very beginning of their industrial life.

The remedy is simple in theory if not in practice. Our schools must fit the educational course to the child, and stop trying to fit the child to the course. They must take the laggard out of the curriculum that is impossible for him, put him with other children of like ability or lack of ability, and educate him to learn the things that he is capable of knowing and to do the things that he has the power to do.

The schools must guard against overworking the subnormal child until he is depressed physically and mentally by fatigue, which is the

great enemy of all progress. Well adjusted activity with well-timed rest and relaxation—this is a factor in hygiene almost as important as nutrition and fresh air in building up inferior physical and mental powers.

The school must stop nagging the subnormal child and overburdening him with educational tasks when his nature demands normal rest and play. The commercial world must stop exploiting the child and trying to turn his time into money when every minute is needed for the normal exercise and development of his growing body and mind.

In this outline of the nature and nurture of the subnormal child we believe that we have not wandered beyond the bounds of rational hygiene, in the strictest sense of the word. We need to broaden our ideas of health and to think of the sound mind as subject to hygienic law, as well as the sound body. In the interest of childhood we would urge the closest and most friendly coöperation of the physicians and the pedagogue; they should work hand in hand, for as Schiller says: "*Sie beide wandeln auf der Henseit Höhen.*"

Having utilized to their fullest extent the benefits of medicine and surgery in removing the handicaps of the subnormal child we should educate him by a rational course of enlightenment and encouragement; and finally set him to doing the work that he is fitted for by his natural endowment and the opportunities offered in his environment.

RESPONSIBILITY OF THE SCHOOL FOR THE DELINQUENT GIRL

BY

ELMER E. JONES

In the present paper I shall discuss that type of delinquent girl which is known to the probation officers and in the juvenile courts. It is the type that proves to be a misfit in public education, drifts from small misdemeanors to large ones, lacks essentially in morals, and in many instances becomes positively immoral. After a due amount of negative treatment by the public school she is committed to some institution for corrective education. I shall endeavor so show from the evidence of clinical cases in the Indiana Girls' School, and from cities in Indiana where such delinquents have been studied, that in this worst type of delinquency the public schools are very largely responsible. In this charge I have not overlooked the fact that the making of delinquents is a very complex process, in many instances being a combination of hygienic, physiological, social, and psychological factors, as well as educational in the narrower sense.

The American public school is an institution founded, ostensibly, for the intellectual needs of the people. It is an institution designed chiefly to give the people mental discipline. Historically, the educated man in America has been, and still is, in many quarters, the man who has been disciplined in memory processes and logical reasoning. Until quite recently it has not been necessary that ideas function—their chief virtue having been existence. It is true that practical ideas and actions have been introduced into the curriculum all along the line, but this has usually been done because of great outside pressure. And at the present moment state commissions representing practical interests and needs are telling the school-masters what shall be in the curriculum of the *new school*. This condition prevails because teachers themselves have always been the bearers of the intellectual torch, even though they had to walk over the dead bodies of their pupils. The curriculum is largely traditional, and the great body of teachers see their duties completed when the text books are mastered.

It is time for us now to found a new school—an institution that founds its curriculum upon the social needs, and causes this curriculum to function in social ends. Such an institution will be, when it is founded, in reality a *new school*. It will assume responsibilities heretofore deemed unworthy of the schools that have been costing us millions and yet have

proven themselves unequal to the solution of the vital problems. It will be an expensive institution in its foundation, but will prove economical in the end, for it will cause the death of the present corrective institutions. It is inconceivable how we can long look upon our present plan as economical or good. What we do is to demoralize our youth, and then spend millions in correcting them. The right scheme should be to correct all as they grow.

There are a few perfectly distinct problems that the school of the future must solve. They may be stated as follows: (a) Every child is entitled to a well developed body—a body every organ of which functions normally; (b) He is entitled to a good home—a home in which wise parents direct his activities and energies into a useful service; (c) He is entitled to a clean heredity, a life background that is pure and normal; (d) He is entitled to a worthy occupation through life, in which he will be able to serve humanity and receive adequate remuneration for the same; (e) He is entitled to a clean companionship throughout the formative period of his life, and especially wholesome associations with the opposite sex; (f) Every child is entitled to all the best that the social and intellectual heritage can give to him in the matter of ideas and ideals. Is there a school in the world to-day that can safely guarantee to youth these things to which he is entitled? Lack of such facilities in our scheme of education is the cause of 95% of all the delinquency found among girls in the State of Indiana. These needs and demands are each and all educational problems which we have as yet failed to solve, and in consequence we are producing the delinquent.

In the light of the clinical study of about five hundred girls the following may be stated as the direct causes of their delinquency: First—There are many cases of delinquency due to the perversion of the normal sex instinct. It is my firm belief that the great majority of delinquent girls are suffering from moral degeneracy, simply and solely because they are strongly sexed, and because they have the maternal instinct fully and normally developed. In this condition of normality they come in contact with lewd and sensuous males, and fall an easy prey to their suggestions and licentiousness. In this matter the public co-educational school is largely responsible. No better place could be found for the fostering of intimacy and secret meetings from under parental control and away from the scrutiny of teachers, than is afforded in the average secondary school of America. A girl of strong impulses, strongly sexed, and great passion is almost sure to fall under such unprotected influences. Yet this is the sort of girl that would make a good mother. The school's responsibility in this matter is to separate the sexes wholly or in part at this critical age, and give carefully planned courses in sex hygiene. It will then happen that matters of sex will not

be picked up on the street from licentious companions as pieces of vulgarity, but will be brought to the attention of the girl by sympathetic teachers who present the matter in the light of modern science. It is the school's responsibility to protect its youth from ignorance of facts that are to function in its social welfare. My own statistics show that about 5% of the cases of delinquency of a sexual nature in Indiana can be traced directly to influences that were started in public schools, revivals, and public places where immoral males come in close relationship with strongly sexed girls at early adolescence.

Second—In about 30% of the cases studied, delinquent girls are found to be feeble-minded. The girl is weak mentally, and from her earliest childhood has been irresponsible. She has probably lacked much protection in the home, but no matter how good it may have been there, the school affords ample opportunity for lewd boys to corrupt and ruin her character. In many instances she has been seduced within a few weeks after entering school for the first time, and has never known that she has been committing a crime until brought before some juvenile court as an offender to society. And after her conviction she is still ignorant of the real nature of her crime. What she has done has been thought by her to be a form of play, the evil of which it is impossible for her to comprehend. The school's responsibility in such cases is clear. The psycho-clinician must be placed in every school with such clinical ability and authority that no case of this sort may escape his notice. Such girls must be segregated in some wise manner and protected during their lifetime. They must be given proper training, a thing which no one knows how to do at present, and should never be allowed to propagate their kind. The school of the future must determine this class and must see that it is protected and trained to its fullest.

Third—Much delinquency in girls is due to a total lack of social entertainment and privileges in the home and in the school. The social instinct ripens at the adolescent period and must be properly adjusted. The girl for whom there is no social life where it might normally be expected to be found, looks for it elsewhere. She finds it on the street with low characters of the opposite sex, and her downfall and ruin are not far ahead. The problem of the school becomes quite different here. At the present we do not quite see how we may provide wholesome social relationships for every school girl. It is because the problem is so difficult and so expensive that we are letting it alone. In my judgment the school of the future must undertake the solution of this most difficult problem. The school must combine with the social worker, and the social worker must be made one of the greatest assets to the mechanism of popular education. She must broaden her duties and be responsible for larger

things. When the school, through social organization, can know with certainty that every girl's social instinct is normally and wholesomely satisfied, then and only then may we expect delinquency, caused by improper social organization to cease.

Fourth—Much delinquency in girls is due to broken and immoral homes. It may not appear at first thought, that the schools are responsible for the moral conditions in the home. But they certainly are indirectly so. We have spent millions and billions of dollars on our much vaunted school system, and I know of few schools in the country that are undertaking thorough-going instruction in home making in the grades and in the early part of the high school course, the place where this sort of instruction will mean the most in the actual modification of our home conditions. It must be learned that the school is not an institution of the "little red schoolhouse" but an organism that embraces the whole community with every interest in it. The school must go right into the home and teach the parents how to rear the children, and lead them to the type of manhood or womanhood we idealize. Thus, the problem of home economy is closely related to the delinquency problem, and delinquency will cease only when our educational system incorporates the home in its curriculum and makes it an institution to be loved and protected.

Fifth—Much delinquency in girls is due to the homes that might very well be called unmoral. Many parents deem their duty to their children ended when they have provided food and clothing for them. There is no love, no real protection, no moral stimuli, no positive home educative influences that count. There is little or no parental care, and the girl is not long under the control of the parent. She becomes a truant, deceives parents and teachers, goes to the street and to her downfall. This sort of a home is very hard to reach, but with proper education and social work, and legislation of real value, such homes will not be formed at all, and thus one potent cause of delinquency will be removed.

Sixth—Delinquency in girls is frequently due to the lack of a vocation lucrative enough to make her self-supporting. It is not infrequent that girls from poor homes are crowded out into department stores and other occupations at a very early age, and because of the fact that they cannot gain a livelihood in this vocation, are forced into immorality. This question is now one of the leading social ones of our day, yet few see it in its proper relations, viz., that vocational education must be compulsory. No young girl should ever be turned loose in the world without a pleasant and lucrative vocation—one in which she will feel that she can be self-supporting and at the same time respectable. The school can

do this, but we are far from it in our shallow pre-vocational work we are at present prescribing in the public schools.

From the foregoing classification of delinquent girls the following table may be of interest, showing percentages belonging to each class:

486 DELINQUENT GIRLS.

I.	Delinquency due to sex perversion.....	4%
II.	“ “ feeble-mindedness.....	30%
III.	“ “ lack of social privileges.....	17%
IV.	“ “ immoral homes.....	18%
V.	“ “ unmoral homes.....	15%
VI.	“ “ lack of vocation.....	5%
VII.	“ “ miscellaneous causes.....	11%

In making this classification it should be borne in mind that it was made only after careful weighing of all the evidence. In some instances it was quite clear that delinquency was due to a number of causes, but in each such case the effort was made to establish beyond doubt the predominant cause. For example, it is quite probable that many of the cases falling into the group of “delinquency due to immoral homes” would also fall in the group of “delinquency due to lack of vocation,” but in the special case the former is considered the predominant cause after weighing all the evidence.

The public schools of the cities and towns of Indiana are directly responsible for at least 60% of the 486 cases of delinquency studied. They are indirectly responsible for 20% more. It forms a clear case of a problem as yet unsolved by the educators of our state. When parents and teachers fully comprehend the meaning of sex relation in education, and when they make the needed adjustments at the adolescent period which will protect both sexes from any abnormalities, one of the largest problems in delinquency will have been solved. When we have compulsory vocational education for every youth which will be based upon a thorough secondary training, another important feature of the problem of delinquency will be removed. When our laws make it impossible to establish and perpetuate an immoral home in which youth are trained in vice, another cause for delinquency will be removed. And when the feeble-minded child is discovered early by the psycho-clinician and is absolutely protected by segregating him, educating him according to his abilities and needs, and making him happy and useful, the greater portion of the problems of delinquency will be solved and the other phases of the perplexing problem may easily be corrected.

THE SIGNIFICANCE OF INTELLIGENCE TESTS FOR MENTAL HYGIENE

BY

LEWIS M. TERMAN

Mental hygiene, like physical hygiene, has come to mean much more than the prevention of disease. Its function is positive as well as negative. Between the high level of perfect mental functioning on the one hand and mental disease on the other there are many intervening grades of efficiency. These levels are not necessarily the same for any two individuals. Each has his own range. It is the task of mental hygiene to bring to bear upon the mind all those influences which are capable of raising the level of its functioning as regards either intellect, or emotion or will.

The fulfillment of this task presupposes not only a knowledge of the general laws of mental activity in the various stages of the life cycle, but a knowledge also of the special limitations, special dangers, special capacities and idiosyncrasies of individual minds. Any scheme of mental hygiene must therefore be based equally upon general psychology and differential psychology, the latter term designating that branch of psychology which seeks to understand the individual mind with reference to those traits which differentiate it from other minds.

The contribution of mental tests to both of these branches of psychology is one which is constantly growing in scope and intrinsic value. In fact, the rehabilitation of mental tests from the general disrepute into which they had fallen is probably the most important psychological event of the last decade, an event whose significance is not yet sufficiently appreciated. Graded tests for the measurement of intelligence, after the method of Binet, and tests for the exploration of association types and "mental complexes," after the method of Jung, are especially rich in possibilities from the point of view of mental hygiene. It is the purpose of this paper to suggest a few such possibilities.

1. Thus far the Binet tests have been valued chiefly as an improved method for the exact grading of the degree of deficiency present in feeble-minded children. Their value for this purpose is two-fold. In the first place, it is necessary to establish the degree of defect before it will be possible to decide intelligently upon either the content of the method of instruction best suited for the training of a backward child. In the second place, intelligence tests are rapidly and properly extending

our conception of "feeble-mindedness" to include milder degrees of defect than have generally been associated with this term. The unpsychological and wholly unscientific methods of diagnosis used by physicians, if we can dignify their usual guess-work procedures by the term method, overlooked the large majority of higher grades defectives. The low grade moron was about as high a type of defective as the physician was ordinarily able to identify as below normal. It is safe to predict that within the reasonably near future intelligence tests will bring tens of thousands of these high grade cases under the surveillance and protection of society. This will ultimately result in curtailing the reproduction of feeble-mindedness and in the elimination of a vast amount of crime, pauperism and industrial inefficiency. It is hardly necessary to emphasize that the high grade cases are precisely the ones whose guardianship it is most important for the state to assume.

2. In addition to the usually recognized burdens imposed upon society by the presence of a large number of mentally defective individuals, there are other costs which are sometimes overlooked. As an illustration we may mention the possible influence upon the intellectual and moral habits of normal children from constant association in the home or school with feeble-minded persons. It would be unreasonable to suppose that the sensitive, imitative, absorbent child would escape injury from such intimate association with inferior and infantile mentation. The crude intelligence, obtuse morals and unstable will of the feeble-minded tend inevitably to affect unfavorably the quality of mental functioning in the normal people associated with them. For children, particularly, mental hygiene demands a better model.

Under present conditions there are few children who altogether escape contact with feeble-minded persons. There must be at least one-half million normal children in the United States who live in families where feeble-mindedness is present. Besides the direct injury wrought upon normal children by such contact there are several unfavorable indirect results. The care, medical attention, educational effort and economic resources wasted upon the feeble-minded would bring far greater returns if expended in behalf of normal children or in the intensive cultivation of genius.

3. The use of mental tests is fast emphasizing the extent of the individual differences to be found in the intelligence of children who are well above the borderline of feeble-mindedness. "Genius," "talent," "dullness" are terms whose content is being greatly enriched. Hygiene demands that the school shall take account more seriously than it has yet done of the existence of individual differences in the ability of its pupils. Too often faulty methods of classification place pupils where

they cannot get normal returns for their efforts. The genius and the dullard are too often chained together in the same lock-step. The discouragement resulting from ineffective or only partially successful effort, as in the case of the retarded pupil, may be the starting point for life-long inefficiency.

The most important aspect of retardation is its bearing upon mental hygiene. When the child approaches for a second time the school work in which he has once failed it can hardly be with other than a drooping spirit. Recent studies in psychopathology have greatly extended our ideas as to the importance of the emotional factor. The feeling of self-distrust and diffidence often engendered by repeated failure is the most constant symptom of that condition of volitional ineffectiveness known as psychasthenia. If it is important for the adult to find a successful outlet for his energies and to experience to the maximum the feeling of accomplishment and triumph, for the child this is imperative.

On the other hand, when the school work is too easy, as it often is for the talented child, there is danger of an intellectual slump. For lack of being recognized and fed genius is often effectually starved. By being kept over-long at what is easily acquired the mind becomes prematurely arrested, enslaved by habits of inferior activity.

In the light of recent developments however, we may now confidently look forward to the development of clinical methods of mental examination which in time will result in the more scientific classification and instruction of the genius, dullard, emotionally abnormal or otherwise peculiar pupil. Our school work with all these classes has been carried on in the dark. If light comes, it must come through the development of differential psychology, the chief method of which must always be mental tests.

4. Reliable tests of intelligence will enable us to promote children largely on the basis of intellectual ability. The information standard for promotion will be replaced by the criterion which asks merely that the child shall be able to do the work of the next higher grade. Hitherto the school has had to rely chiefly on the information standard for the simple reason that reliable means for determining intelligence have not been available.

If mental tests prove feasible for use in the place of the ordinary school examinations they will render a notable service to school hygiene. Investigations like those of Serafani, Ignatieff, Koginoff, Graziano and Helwig are in point here. Ignatieff, for example, in a study of the effects of a four weeks' examination period on 242 pupils in a Moscow military school found that 79 per cent. lost weight during the month and that hardly any made the gain normal for children of the age in

question. For 13 of these pupils the vacation of $3\frac{1}{2}$ months which followed the examination was not sufficient to make up for the loss of weight suffered during the strenuous pre-vacation period. Ignatieff concludes that in its physical effects the prolonged examination is comparable to a severe illness, and that a mental strain severe enough to cause such profound alterations in metabolism could hardly fail to affect unfavorably that organ most concerned in the overpressure—the brain. The results of Serafani and Koginoff are similar to those of Ignatieff.

The hemotological studies of Graziani and Helwig on the effects of protracted mental strain upon the composition of the blood are even more decisive. The former subjected eighteen university students and seventeen children to blood tests before and after the usual school entrance examinations and was able to demonstrate a decrease in hemoglobin amounting on an average to 10 per cent. with the students and 7.4 per cent. with the children. The red corpuscles, although apparently not affected in number, showed changes in the power of resistance much the same as other investigators had demonstrated as resulting from weak poisons.

Results of this kind could be quoted from other studies. The use of school examinations in the estimation of mental ability should be discontinued and replaced by brief, interesting and non-injurious mental tests. The latter are not only more hygienic; they are also infinitely more accurate and enlightening.

5. The development of differential psychology through mental tests is probably destined to play an important role in the work of vocational guidance, and vocational guidance is a large factor in preventive mental hygiene. The instinct of workmanship is one of the most generic of human motives, and when given a suitable outlet it is one of the most satisfying. There is little hope for the neurotic individual who is not successfully engaged in useful and interesting work. Hysteria is preëminently a disease of the unemployed or the aimlessly employed. A fruitful and interesting occupation engages and practices the synthesizing powers of will, unifies the personality and prevents disagreeable and submerged "complexes" from producing their effects of mental disintegration.

While we are not yet in position to draw up the outlines of the psychology of vocational guidance, it is already evident that intelligence tests are destined to become an indispensable tool for the vocational counselor. When thousands of children who have been tested by the Binet scale (or by other standard tests of intelligence) have been followed out into the industrial world and their success in various occupations noted, we shall know pretty definitely the vocational significance

of any stated degree of mental retardation or advancement. Researches of this kind will ultimately establish the minimum *intelligence quotient* for success in each leading occupation.* We are in urgent need of usable tests which can be given to children by groups, thus making possible the official registration of an intelligence quotient for each individual child. It would then be possible to lay before each child at the end of his school course an array of occupations in which (as far as intelligence is concerned) he might reasonably be expected to succeed. Tests of other mental and physical traits will no doubt be available in the comparatively near future.

6. Those who inhabit our hospitals for the insane were but a little while ago pupils in our schools. In view of the functional origin of certain insanities, these must be looked upon as largely preventable. Mental disorders which yield to the method of re-education could even more easily have been prevented altogether by right education. But what will pass as right education for the normal child may not be best adapted for the child of neurotic tendency. Hence the need of psychological methods which will enable us to identify such children early in their development. At present surprisingly little is known of pre-hysterical or pre-psychasthenic states, etc. After these have been more thoroughly analyzed it ought to be possible to devise tests which would determine the presence or absence of the traits in question.

In this connection one thinks naturally of possible uses of Jung's association method, psycho-analysis, etc. If "emotivity," in Janet's sense, has the symptomological importance attached to it by that writer effort should be made to construct tests which would reveal its degree and nature in the individual child. The prodromal symptoms of mental disorder once discovered, precautions could at once be taken to guide mental functionings early into the paths of normality. The method of re-education is slow and its issue doubtful. It will be more effective to manage the work of education in such a way as to render re-education unnecessary. All the schools activities must be judged by the contribution they make to mental hygiene in the broad sense.

7. Mental tests are aiding us to understand better some of the moral peculiarities of children, and the moral life, it hardly need be said, is full of possibilities for mental hygiene. We have recently learned that an astonishing amount of juvenile delinquency and adult criminality are the result of feeble-mindedness. Nearly half of those punished for their supposed wickedness are in reality paying the penalty for their stupidity.

*Intelligence quotient = $\frac{\text{mental age}}{\text{real age}}$

This is true even of school punishments, as appeared in Kemsies' statistical study of this subject. The 16 per cent. of the pupils ranking lowest in ability received 80 per cent. of the punishments, while the brightest one-third children received almost none. How much wiser it would be in such cases to substitute educational treatment founded on a psychological understanding of the factors involved than to resort blindly to the method of beating.

8. It is necessary for the school hygienist to know as exactly as possible the weight of every external factor which influences physical and mental development. The essential task of school hygiene is that of guarding the growing child against influences which would affect growth unfavorably, and as long as these influences have not been sifted, weighed and measured school hygiene has no solid ground to stand on.

When one searches the literature of school hygiene for evidence of the supposed injurious effect upon mental efficiency of decayed teeth, oral sepsis, reduced sleep, obstructed breathing, bad ventilation, insufficient exercise, malnutrition, etc., one is met by endless assertion painfully unsupported by demonstrated fact. As a matter of fact we know next to nothing about the mental effects of any of the factors named. Ayres' finding to the effect that children with badly neglected teeth require an average of one-half year more time to complete the eight grades, may be interesting, but it proves nothing in the way of a cause and effect relation. It has been assumed that a large proportion of school children constantly have their faculties more or less clouded by lack of sufficient sleep. But so far no correlation has been demonstrated between intelligence and hours of sleep. The study of mental fatigue languishes for lack of unequivocal tests of mental efficiency. We do not know even how much truth there is in the universal belief that adenoids cause stupidity. As for ventilation, millions of dollars are expended annually on the assumption that mental and physical dangers are warded off in this way. But our positive knowledge as to the supposed stupifying effects of foul air, high temperature, etc., is very meager indeed.

It is not our purpose to deny such influences, but merely to point out that our best current literature on the topics offers nothing more substantial than supposition. When tests of mental ability are sufficiently refined, influences of this kind will be easy to detect if they exist. It will be necessary, however, for experiments with this end in view to be rigidly controlled. Tests carried on without a control, as was the case in the Cleveland oral hygiene investigation, only add to the confusion.

Again, the influence on mental development of early instruction (*vide* the Sidis case), the supposed general effects of special training

(problem of formal discipline), the influence of age, sex, and heredity are questions of the greatest import for mental hygiene, and questions also which can hardly be satisfactorily cleared up without the use of more refined mental tests than we now have. The proper use of mental tests would have told us, for example, whether the recently exploited "wonder children" owe their precocious intellectual prowess to superior training or to native ability. Mental tests will inform us whether the so-called inferior races are really inferior or merely unfortunate in their lack of opportunity to learn. They will be able to give us meaningful norms of intellectual performance for different ages and thereby enable us to prevent the waste of untimely instruction.

In short, mental hygiene, being as broad practically as education itself, has need at every step of data which can only be supplied by the further elaboration of mental tests.

SESSION FIFTEEN

Room C.

Thursday, August 28th, 9:00 A.M.

MENTAL HYGIENE AND THE HYGIENE OF THE MENTALLY ABNORMAL CHILD (Part Three)

S. JOSEPHINE BAKER, M.D., *Chairman*

DR. EDWARD DURNEY, Buffalo, N. Y., *Vice-Chairman*

Program of Session Fifteen

S. JOSEPHINE BAKER, M.D., Director of the Division of Child Hygiene, Department of Health, New York City. "The Physical Condition of Retarded School Children."

ELSIE FOGERTY, Lecturer to Teachers' Educational Department, London County Council, England. "Training of the Faculty of Speech, Its Place and Method in General Education."

ISABELLE THOMPSON SMART, M.D., Medical Examiner of Mentally Defective Children, Department of Education, New York City. "Some Potent Factors in the Seeming Increase in Mental Defect."

FREDERICK J. FARNELL, M.D., Providence, R. I. "The Recognition of Special Types of School Children."

WALTER E. FERNALD, M.D., Superintendent of Massachusetts School for the Feeble-Minded. "Recognition of Mental Defect in the Higher Grades."

MARY SUTTON MACY, M.D., Secretary of the Public Health Education Committee of the Medical Society of the County of New York, New York City. "Some Unusual Phases of Child Hygiene."

SIEGFRIED BLOCK, M.D., Examiner Children's Court, New York. "Children's Supreme Court, Unification of Child Welfare Forces."

DR. ANTONIO VIDAL, Buenos Aires, Argentina,
and

DR. CARLOS ROBERTSON, Buenos Aires, Argentina. "The Intelligence of the School Children." Joint paper.

Papers Presented in Absentia in Session Fifteen**(Read by Title)**

ELIZABETH IRWIN, Field Worker, Committee on Hygiene of School Children, Public Education Association, New York City. "The Particular Need of Mental Classification in Special Schools."

H. CRICHTON MILLER, M.A., M.D., Fellow Royal Society of Medicine, London, England. "A Note on the Psychic Factor in Stammering."

THE PHYSICAL CONDITION OF RETARDED SCHOOL CHILDREN

BY

S. JOSEPHINE BAKER

Of all the problems presented in regard to school medical inspection and the hygiene of the school and school child none has been more complex than that concerning the relation between physical ill health and school progress. Owing to the lack of standardization of methods of promotion all studies made of this subject have in large degree been unsatisfactory and unconvincing. The notable contribution made to this subject by Dr. Leonard Ayers, for instance, gave as a statistical conclusion the statement that school children with defective vision progressed as rapidly in their school advancement as the average child, yet it is the common impression received by those of us who are in active contact with these children, that defective vision handicaps a child in its school progress and is a frequent cause of retardation. Promotion seems to depend upon such a wide range of variable factors that scientific conclusions as to the contributing cause of ill health cannot be drawn or applied to the problem as a whole. The retarded school child is a pedagogical problem of the greatest magnitude. In the elementary public schools of New York City there were 124,398 over age children in the grades or 21 per cent out of a total registration of 579,728, according to the annual report of the City Superintendent of Schools for the year ending July 31, 1912. The same report states that "The problem of over age may be grappled with in three ways: (1) by way of organization and classification; (2) by modifications in the curriculum, and (3) by improved teaching." Two forms of practical methods are outlined: (1) special classes and (2) the so-called double time plan. Here the problem is considered wholly in its pedagogical aspects. There can be no question, however, that it is the duty of the school hygienist to determine what relation, if any, physical ill health has as an influence in non-promotion and to contribute a program for dealing with this particular factor. Such a study was made during the period between February and July of this year by specially selected, interested and efficient physicians and nurses of the Division of Child Hygiene of the Department of Health in the New York City Public Schools.

THE PHYSICAL CONDITION OF RETARDED SCHOOL CHILDREN.

TABLE NO. I.

Number of children examined.....	1,541
Number found with physical defects.....	1,202
In "D" classes.....	26
In "E" classes.....	107
Over-age in grades, from 1a to 8b.....	1,069
	<hr/> 1,202

Six out of the twelve schools selected have "D" and "E" classes. The remainder have retarded and over-age children placed throughout the regular grades.

* * * * *

"D" classes are for pupils who are preparing to take examinations for employment certificates.

"E" classes are for over-age children to endeavor to make up for grades lost.

For the purpose of this study, four groups of schools in New York City were selected—four in the Borough of Manhattan, three in the Borough of the Bronx, three in the Borough of Brooklyn and two in the Borough of Queens—a total of twelve schools. The selection was made on the basis of the average school, without a preponderating attendance of children of any one nationality and with a view to obtaining the best possible coöperation of the principals and teachers. Three sets of record cards were used—one to contain the child's school record and the teacher's opinion as to causes of retardation, the second for data of the physical examination, treatment provided and result of treatment as shown by physical re-examination, the third for social, sanitary and hygienic conditions of the home.

THE PHYSICAL CONDITION OF RETARDED SCHOOL CHILDREN.

TABLE NO. II.

Number of retarded children with physical defects.....		1,202
Ages	Number	Per Cent.
6 years.....	4	0.3
7 years.....	20	1.7
8 years.....	57	4.7
9 years.....	94	7.8
10 years.....	121	10.1
11 years.....	153	12.7
12 years.....	215	17.9
13 years.....	223	18.6
14 years.....	218	18.1
15 years.....	77	6.5
16 years.....	15	1.2
17 years.....	2	.2
Not given.....	3	.2

In six of the twelve schools, special classes designated as "E" are maintained for over-age pupils who are unable to maintain their proper school grade; other classes designated as "D" are maintained in two of the selected schools for pupils who need extra preparation in order that they may at the age of fourteen years complete the 5-B grade legally essential for obtaining employment certificates. (The normal age of the 5-B grade child is given by the Department of Education as ten to twelve years.) Children were taken in order from these classes, twenty-six from classes D and one hundred and seven from classes E, the remaining one thousand and sixty-nine children were selected by the principals and teachers from over age children in the grades where no special classes for them were provided.

In all, 1,541 children were physically examined and kept under supervision. None of these children were true mental defectives and inability to speak the English language was not a factor in the cases examined nor the cause of retardation. In the instances enumerated under "foreigner—recent arrival" in Table XII previous lack of education was the retarding influence. The ages of the children ranged from 6 to 17 years, the greater number of instances of retardation being found at 13 years, with a total of 223 or 18.6 per cent., the number at each age increasing up to this point in rapid progression and declining afterwards with equal rapidity.

THE PHYSICAL CONDITION OF RETARDED SCHOOL CHILDREN.

TABLE NO. III.

Nativity	Number	Per Cent.
United States.....	646	53.7
Russia.....	324	26.9
Italy.....	114	9.5
Austria.....	32	2.6
England.....	21	1.7
Germany.....	20	1.6
France.....	12	.9
Hungary.....	6	3.1
Roumania.....	3	
Poland.....	2	
Asia.....	2	
Spain.....	1	
Gallicia.....	1	
Sweden.....	1	
South America.....	1	
Not known.....	16	

THE PHYSICAL CONDITION OF RETARDED CHILDREN.

TABLE No. IV.

NON-PROMOTIONS.

Times Left Back	Pupils with Physical Defects	Per Cent.	Total Number Non-Promotions
0	218	18.1	0
1	245	20.4	245
2	250	20.8	500
3	197	16.5	591
4	123	10.3	492
5	78	6.4	390
6	33	2.7	198
7	14	1.2	98
8	6	0.5	48
9	3	0.2	27
No record	35	2.9	0
	1,202	100.0	2,589

2.6% average number of times failed of promotion.

THE PHYSICAL CONDITION OF RETARDED SCHOOL CHILDREN.

TABLE No. V.

	Routine Physical Examinations 1912		Special Physical Examinations of Retarded Pupils	
Number of children examined.....	287,469		1,541	
	Number	Per Cent.	Number	Per Cent.
Normal.....	80,749	27.8	158	10.2
Teeth defects only.....	119,359	41.5	181	11.8
General defects.....	87,361	30.4	1,202	78.0

The nationality of the children showed a wide compass; 53.7 per cent. having been born in the United States, 26.9 per cent. in Russia, 9.5 per cent. in Italy, the remainder being credited to twelve different countries.

The number of non-promotions are shown in Table IV. For the purpose of this study only the children with general physical defects are considered. The 218 children who had not previously failed of promotion include those who, entering school for the first time, were over age for their grade. These 1,202 children had failed of promotion 2,589 times or an average of 2.6 failures for each child.

Of the 1,541 retarded children examined 1,383 or 89 per cent. were found to have one or more physical defects. This is of particular interest in comparison with the 71.1 per cent. of physical defectives found

in the regular routine examination of all pupils. The fact of particular importance in this broad classification as shown in Table V is the preponderance of the general physical defects occurring in the retarded children; 78 per cent. as contrasted with 30.4 per cent. in the children examined in the regular routine. The children with defective teeth as the only physical defect are contrasted in inverse ratio showing 11.8 per cent. for the retarded children to 41.5 for the children as a whole.

THE PHYSICAL CONDITION OF RETARDED SCHOOL CHILDREN.

TABLE NO. VI.

Regular Routine Physical Examinations made During 1912

Special Physical Examination of Retarded School Children

No. of children examined.....	287,469		1,541	
No. found with physical defects... 206,720	— 71.9%		1,383	— 89.8%
No. of defects found.....	226,639		2,986	
Nature of Defect	Number	Per Cent.	Number	Per Cent.
Anemia.....	*	*	335	23.
Malnutrition.....	8,303	2.9	557	36.1
Defective vision.....	21,078	9.3	536	34.7
Defective hearing.....	1,206	0.5	47	3.0
Defective nasal breathing.....	21,931	7.6	316	20.4
Hypertrophied tonsils.....	30,021	10.4	297	19.2
Defective teeth.....	142,168	49.4	796	51.6
Pulmonary disease.....	335	0.1	47	3.0
Cardiac disease.....	1,597	0.5	35	2.3
Average number of defects per child		1.1		2.5

*Not classified.

The relatively small number of retarded children who were physically normal with the exception of defective teeth offers an interesting field for study as to the significance of dental defects in relation to retardation.

The comparison of the various types of physical defects found, as shown in Table VI, is significant, malnutrition found in 2.9 per cent. of all school children, was found in 36.1 per cent. of the retarded children; anæmia in 23 per cent. of the cases. The examination for defective vision was made more thoroughly than has proved practical in the regular routine examination. Each child was given a thorough refraction. However, as subjective symptoms of eyestrain are regularly ascertained as well as the Snellen test card used in the regular routine examinations, I am of the opinion that the marked difference—34.7 per cent. in the retarded children as compared with 9.3 per cent. in the children as a

whole—is not wholly due to the greater care taken in this instance, but rather should be considered as a definite cause of the retardation and therefore a predominant symptom in children selected because of inability to progress in their studies. The striking contrast between 20.4 per cent. of instances of defective nasal breathing in the retarded children and 7.6 per cent. in the regular group is more marked than that of the respective occurrence of 19.2 per cent. and 10.4 per cent. of hyper-

THE PHYSICAL CONDITION OF RETARDED SCHOOL CHILDREN.

TABLE No. VII.

	Occurring as Only Defect	Associated with Other Defects
Anemia.....	16	339
Malnutrition.....	44	513
Defective vision.....	176	360
Defective nasal breathing..	62	254
Hypertrophied tonsils.....	30	267
Defective hearing.....	3	44
Defective teeth.....	181	615
Total.....	512	2,392

trophied tonsils. Defective hearing in 3 per cent. of the cases is an obvious cause of retardation and the contrast with .5 per cent. in the children at large calls for no further comment. Pulmonary disease, with the ratio of 3 per cent. to .1 per cent. and cardiac disease in the contrasting occurrence of 2.3 per cent. in the retarded and .5 per cent. in all of the children follows the general ratio of the other serious defects. The one exception noted is the relative importance of defective teeth. While they were found to be present in 51.6 per cent. of the retarded children as opposed to 49.4 per cent. in the children of the regular group, they were found mainly in association with other physical defects in the cases studied. The retarded children studied showed an average of 2.5 defects per child, while the children examined in routine show an average of 1.1 defects per child.

THE PHYSICAL CONDITION OF RETARDED CHILDREN.

TABLE No. VIII.

HOME CONDITIONS OF ALL CHILDREN WITH PHYSICAL DEFECTS.

		Per Cent.
PREMISES: Good.....	543	45.2
Fair.....	380	31.6
Poor.....	243	20.2
No record.....	36	3.0
		100. %

FAMILY:	Good.....	533	44.4	} 100. %
	Fair.....	403	33.5	
	Poor.....	220	18.3	
	No record.....	46	3.8	
FOOD: (Exclusive of stimulants)	Good.....	704	58.6	} 100. %
	Fair.....	299	24.9	
	Poor.....	171	14.2	
	No record.....	28	2.3	
HYGIENE:	Good.....	524	43.6	} 100. %
	Fair.....	429	35.7	
	Poor.....	212	17.6	
	No record.....	37	3.1	
REST:	Good.....	679	56.5	} 100. %
	Fair.....	391	32.5	
	Poor.....	90	7.5	
	No record.....	42	3.5	

The analysis of the conditions of the home, including sanitation, hygiene and care is offered merely as an general index. Such data, even when compiled by careful investigators is a matter of relative opinion and is necessarily influenced by the personal point of view. The factors considered were the sanitary and hygiene conditions of the premises and home, family intelligence and care given to the child and the food, hygiene and rest periods, classified together they were found to be good in 49.6 per cent., fair in 31.6 per cent., poor in 15.6 per cent., while 3.2 per cent. could not be classified. A special analysis of the same factors in the malnutrition and adenoid and hypertrophied tonsil cases showed much the same general average.

THE PHYSICAL CONDITION OF RETARDED CHILDREN.

TABLE NO. IX.

MALNUTRITION CASES.

PREMISES:	Good.....	320	49.5	} 100. %
	Fair.....	188	29.1	
	Poor.....	123	19.0	
	No record.....	16	2.4	
FOOD: (Exclusive of stimulants)	Good.....	398	61.5	} 100. %
	Fair.....	174	26.9	
	Poor.....	66	10.2	
	No record.....	9	1.4	
HYGIENE:	Good.....	308	47.6	} 100. %
	Fair.....	223	34.5	
	Poor.....	103	15.9	
	No record.....	13	2.0	
REST:	Good.....	431	66.6	} 100. %
	Fair.....	155	24.0	
	Poor.....	42	6.5	
	No record.....	19	2.9	

THE PHYSICAL CONDITION OF RETARDED CHILDREN.

TABLE No. X.

HOME CONDITION OF NOSE AND PHARYNX CASES.

		Per Cent.	
PREMISES:	Good.....	259	49.1
	Fair.....	173	32.8
	Poor.....	84	15.9
	No record.....	12	2.2
		100. %	
HYGIENE:	Good.....	258	48.9
	Fair.....	175	33.1
	Poor.....	80	15.1
	No record.....	15	2.9
		100. %	

Table XI is of interest as showing the use of stimulating beverages by the children suffering from malnutrition. The limited use of wine or beer in this group can hardly be considered as a contributing factor in these cases, while the use of coffee by 39.8 per cent. and tea by 14.3 per cent. may readily be conceived as having some bearing on the etiology of the disturbed nutrition.

THE PHYSICAL CONDITION OF RETARDED CHILDREN.

TABLE No. XI.

STIMULANTS (MALNUTRITION CASES).*

No. of Pupils		Stimulants Used	Stimulants Not Used
647		304—47%	343—53%
Coffee used by	258 pupils.....		39.8%
Tea	" " 93 "		14.3%
Beer	" " 20 "		3.09%
Wine	" " 3 "		.46%

*Including the anemia cases of marked type.

The assigned causes of retardation in 984 of these physically defective children are given as opinion based upon the factors from the school point of view. Here personal illness as given in 27.4 per cent. of the cases studied is the only definitely given cause that may be considered as bearing upon the physical status of the children examined. No proof can be presented, worthy of acceptance, showing that the children in this group were retarded in their school progress because of the presence of the untreated physical defects discovered. Yet the fact remains that these children who by reason of their retardation must be classified as of subnormal mentality are physically subnormal in a greater degree than the average child. Disregarding the pedagogical aspect of the case, is it not the duty of the school hygienist to definitely focus his

attention upon the retarded school children as the class who inevitably, by virtue of their physical disability must be retarded in future physical resistance and good health in adult life?

THE PHYSICAL CONDITION OF RETARDED CHILDREN.

TABLE No. XII.

REASONS FOR RETARDATION.

Of the 1,202 pupils with physical defects, the records of 218 gave no information upon which causes for retardation might be based. The causes ascribed for the remaining 984 pupils are herewith given, it being understood that in many cases a student had several factors checked up against him:

		% of all Pupils	% of all Factors
Mentality.....	232	23.6	22.4
Foreigner (recent arrival).....	115	11.7	11.1
Late start.....	191	19.4	18.4
Personal illness.....	270	27.4	26.0
Illness at home.....	25	2.6	2.4
Quarantine.....	24	2.5	2.3
Conduct (including truancy).....	55	5.6	5.3
Absence (not specifically defined).....	81	8.2	7.8
Frequent change in schools.....	34	3.4	3.3
Family illiteracy.....	10	1.0	1.0
	<hr/>	<hr/>	<hr/>
	1037	984 pupils	1037 factors

THE TRAINING OF THE FACULTY OF SPEECH, ITS PLACE AND METHOD IN GENERAL EDUCATION

BY

ELSIE FOGERTY

The modern conception of school hygiene demands that we should find in the mental and physical activities of the normal child itself the agents required for its complete development.

More and more the idea of external treatment, of props, crutches, apparatus, arbitrary schemes of "physical development," sternly scientific experiments in the curriculum, have gone the way of the drugs and backboards of an earlier generation.

We recognize that the child has in itself the faculties, the forces, the dynamic powers which will react on a suitable environment and generate the ideal activity.

I would speak to you to-day of the mental and physical results which the opportunity of developing one faculty, one great group of physical and mental activities will bring to the normal child.

By five gates the impressions of the visible universe press in upon the brain, by one those impressions find utterance—the faculty of speech.

It is true that some of us may also possess the supreme gift of an artistic power of self-expression. We may be artists in one of the many senses of the word; even so, can it be denied that the most direct, the most vivid, the most appealing art forms in the world are those which depend for their expression on voice or speech? So I have often said that in speech we find the Outward Gate of the mind.

But if we look more closely we find much more than this. If in the course of our speech study we turn from health to disease we find ourselves face to face with a series of psychological adjustments almost incredibly complex.

We find, for instance, that it is possible for an individual who retains every one of his faculties apparently unimpaired to become incapable of attaching any sense to the printed or written words which he reads with his eyes, to be, in fact, a sufferer from word blindness. We find another, to all appearances normal, to whom the sounds of words have ceased to possess any meaning, who is afflicted, in fact, with word deafness. We find a third who can repeat every word said to him, who can read and write and see, but in whom the link that binds utterance and thought is broken, and who is suffering from aphasia; and so we

realize that knowledge of words and power of speech implies connection with sight, with hearing, with the infinitely complex motor scheme of utterance, and finally with that subtle and illusive thing standing on the thresholds of the material and spiritual world—memory. Many of you will know how in the most difficult (to my mind), but perhaps the most fascinating of his works, Professor Bergson has shown us this relationship. I make no apology for quoting the passage:

“I listen to two people speaking in a language which is unknown to me. Am I able to hear them? The vibrations which reach me are the same as those that strike upon their ears. Yet I perceive nothing but a confused noise in which all the sounds resemble one another. I distinguish nothing, I could repeat nothing.

“In the same sonorous confusion the two speakers, on the contrary, distinguish consonants, vowels, syllables, in no way resembling one another, and finally distinguish definite words. Where lies the difference between us? The problem is to understand how the knowledge of a language—a knowledge which is only memory—can modify a present, purely material perception and actually enable some to hear what others under the same physical conditions, cannot hear. It is supposed, it is true, that the auditory memories of words stored in the memory answer to the sound impressions and come to reinforce their effect. But if the conversation which I hear is only a meaningless noise to me, the sounds composing it may be reinforced as much as you like; for all that it is louder, the noise will not be less confused. In order that memory of a word should be called up by the sound which is heard, the ear must at least hear that word. How will the sounds perceived speak to the memory? How will they choose in the storehouse of auditory images those which are to come into relation with them, if they have not already been divided, distinguished, perceived, in fact, as syllables and words?

“The difficulty would be insurmountable if we really had to deal only with auditory impressions on the one side and auditory memories on the other. But that is not the case, if it is a fact that the auditory impressions organize nascent movements—movements capable of performing a kind of scansion to the phrase heard, and so marking its principal articulations. These automatic movements form the mental accompaniment of speech, at first confused and badly co-ordinated; gradually disengaging themselves as they are repeated, and finally sketching a simplified figure where the listener finds in broad lines and in their main directions the very movements of the person who speaks. Thus in the form of nascent muscular sensations these would unfold in our consciousness what we may call the ‘motor scheme’ of audible speech.

"Training an ear to the elements of a new tongue would, therefore, consist neither in the modification of a sound heard, nor in its connection with a memory; it would be the coördination of the motor tendencies of the muscles of the voice to the impressions received by the ear; it would be, in a word, the perfecting of the accompanying motor action."

When we look upon the faculty of speech in such a light as this we need, I think, a metaphor more far reaching than that of the Outward Gate; to borrow a phrase from commercial thought we find in speech the "Clearing House" of the brain.

So much for the mental side, take now the physical.

It is obvious that the neuro-muscular coördination of speech calling into play as it does the action of the respiratory vocal and articulatory apparatus and placing the whole under the control first of the conscious will, after of the sub-conscious mental processes described above constitutes one of the most skilled actions of which the human organisation is capable.

It is further distinguished by the following characteristics:

(1) A connection with the great vital centres of human organisation so intimate that any slightest disorder in their functions, a fatigue in their activities, is instantly reflected in the nature of utterance.

(2) The most intimate interaction of physical and mental perceptions involved in any human activity, and the consequent provision of most unrivaled opportunities for study and for gaining control of these reactions.

(3) A practical danger and a practical help in the ordering of scholastic and professional life which represents either an appreciable loss or an appreciable gain in time, and in concentration during the whole educational period.

(4) A channel of artistic culture which will form the most unfailing and universal aesthetic stimulus to the natural genius.

On the first ground I claim for speech and voice training a place, and in some respects, an authoritative place, in any scheme of physical training. On the second ground I claim that a scientific study of the character and indication of speech shall be part of the equipment of every teacher, and that abnormalities of speech in children shall be treated as among the serious indications of nervous and physical instability.

On the third ground I claim a reasoned and graduated method of speech training to suit the growing development of the child through the whole period of growth from infancy to maturity.

On the fourth ground I claim the jealous safeguarding of the national inheritance of speech, its careful study, and standardisation and a reasoned attempt to convey to the rising generation as a living thing, and not only as a dead literature.

Each point can only be briefly illustrated.

(1) The first indication of fatigue in muscular exertion and the first

indication of most ordinary ailments is an alteration in vocal tone. "Are you tired?" "No." "You sound tired." Who has not heard such a question and answer? Certain systems of physical training produce these results invariably; I mean those entailing jerk, stiffening coarseness of muscular control, absence of fine coördinated movements, antagonistic muscular movements during forced inspiration. In a word two-thirds of the ordinary school drill movements. They injure vocal tone.

I claim that these must be modified. That, for instance, the voice alone is a sufficient test of respiratory movements, and all teaching of respiratory exercises shall have as its controlling test their effect on vocal tone. Briefly, vocal tone requires the practice of equally balanced inspiratory and expiratory movements, in a relaxed position. Control of expiration, absence of forced inspiration, and of antagonistic shoulder and arm movements.

I claim that no other respiratory exercises possess any genuine hygienic value whatever and that all others are attended by risks which render them unsuited for use by children.

The following conclusions arrived at by the University Committee reporting on breathing for voice will illustrate my points; they find that:

- (1) The law of "Reciprocal Innervation" governs all muscular contraction.
- (2) Ideal breathing (for voice) is carried out by those muscular movements which produce efficient expansion of the chest, under perfect control (provided always those muscles are kept out of action which interfere with the action of respiration: e. g. shoulders and neck muscles).
- (3) Such breathing should bring every part of the lung into activity.
- (4) Beyond a certain point, every additional gain in expansion of the chest is at the expense of control, and is liable to lead to permanent deterioration of the muscles and injury to the lung.
- (5) Ideal breathing should secure a maximum of mobility of the chest and abdominal walls, such mobility being under perfect control.

"It will be advantageous to consider somewhat more fully in what manner, and to what extent, the normal respiratory movements are modified by the introduction of speech.

"In health, respiration, properly carried out, brings the whole lung into activity, and in ordinary quiet breathing this process is (largely) automatic. Breathing for voice introduces a voluntary or quasi-voluntary factor, an addition to the purely respiratory function.

"By means which are under the control of the will the capacity of the chest can be so enlarged that varying amounts of air, for varying requirements, can be drawn into it over and above the amount required for the aeration of the blood.

"This bringing of the more or less automatic muscular apparatus of respiration under the direct influence of volition is what is meant by Control; and without it sustained coördinated speech is impossible.

"Breathing for voice, as contrasted with the breathing of repose which is automatic and mainly diaphragmatic, presents certain new factors. Of these the employment of the diaphragm as a voluntary muscle is probably the most important.

"When the diaphragm acts in this way, in addition to its descent which is the more obvious result, the lower ribs are elevated increasing the transverse diameter of the body at this level, thus providing additional space at that part of the abdominal cavity for the viscera displaced by the descent of the diaphragm. Simultaneously the muscles of the abdominal wall come under the sphere of influence. In the breathing of repose the tonus of the broad muscles of the abdomen is such as just to admit of the necessary bulging forward, which is determined by the downward displacement of the abdominal contents by the contracting diaphragm. In breathing for voice this tonus is increased, as can readily be appreciated, by palpation. The effect of this hardening of the abdominal wall checks the outward bulging (which is no longer necessary) and by steadying the lower part of the chest takes a share in the control of expiration.

"Regarding the other factors concerned in the control of expiration the sub-committee are of opinion that further investigations must be undertaken before any authoritative pronouncement can be made.

Note by Professor Sherrington on "Reciprocal Innervation."

"The inspiratory and expiratory muscles are mutually antagonistic. There is reason to believe that like other antagonistic muscle-groups they obey in their relations the rule of reciprocal innervation, that is, when the motor centres of the inspiratory are inhibited, and conversely.

"It has been shown that in the normal breathing of the rabbit the electrical current (action-current) of the diaphragm ceases altogether during the expiratory phase, but that in the abnormal breathing of the animal under chloral the action-current of the muscle (diaphragm) persists, even throughout each expiration, although in diminished intensity. The diaphragm and its motor centre are, in the latter case, never given a full repose at all and fatigue of respiration ensues."

(2) All mental defects are reflected in speech, whether these defects are mere habits, or partly the result of nervous instability, or the more deep-seated disturbances of speech neuroses, or of mental deficiency. I ask for a reasoned system of treatment for these defects, akin to the curative practice adapted for physical defects. The reaction on the

mind itself of such practice is undeniably far more intimate than that of ordinary occupations or of purely physical training, valuable as both these are. It works, too, in a subtle manner; for speech defect is not only a result in many cases of mental defect. It increases to a terrible degree the *apparent* handicap of such mental defect and so helps to set up a barrier between the normal and the slightly deficient child, behind which the latter often endures agonies of isolation and self-torture, ending later in life in complete mental breakdown.

Turning for a moment to the professional requirements of the teacher, a subject which concerns us here very deeply, we find that:

Speech is the teacher's chief tool.

He may multiply methods and apparatus, complicate diagrams and charts, in the effort to be clear, pile up rules and discipline marks in the effort to train character, but if clarity and sympathy, authority and charm, are absent from his speech they will remain a shell without a living organism within it.

Then, too, speech fatigue is the teacher's characteristic fatigue neurosis. At one time, under the one Educational Authority of London alone, over a thousand teachers were found absent from causes connected with bad use of voice.

From the teacher the children gain their chief idea of beauty and perfection of speech; and whatever the future of the child the use of speech, that is of the mother tongue, will be preëminently of importance to it.

As I have already suggested, through the study of the characteristics of normal and abnormal speech, the teacher will make the biggest step forward in the more intimate side of curative work—whether mental or physical.

The teacher, therefore, needs speech and voice training for himself as part of his professional equipment and for the child, in order to teach and to raise the standard of spoken language and also as a means of helping the development of the child in all its training.

I have before me the Syllabus of our course for this year in the lectures to teachers under the London County Council Education Authority.

SYLLABUS. *The Training of the Voice.*—THE CULTIVATION OF VOCAL TONE.—Definition of tone—Scientific principles of voice training—relationship to physical education and phonetics. Rhythmic gymnastics—Muscles and their antagonists—relationship of rhythm in music to movements used in games of skill, dancing, organised games and physical education. THE DEVELOPMENT OF A FLEXIBLE BODY FOR VOICE AND HEALTH.—Tone in voice and tone in health—grace in movement—lightness of action and artistic movements—general exercise for flexibility and poise of body. *Ten minutes' daily voice and health exercises.*—Breathing exercises—æsthetic movements—dancing steps—skipping—corrective exercises. Flexible v. rigid framework of trunk.

THE DEVELOPMENT OF AN ACCOMPLISHED BODY.—Artistic muscular development—different qualities of muscles affected by resistances and mode of action—artistic exercises for accomplishments. *Mental control and rhythm in movement.*—The neuromuscular apparatus—the psychology of rhythm—daily practice for efficiency in co-ordinated movements—complicated co-ordinated movement used in voice and accomplishments—their educational advantages—concentrated attention and nerve strain—mental and physical fatigue—how prevented in schools—the five minutes interval.

THE CHILD'S VOICE.—Educational value, mental and physical—breathing and artistic movements. *Detailed explanation of the breathing exercises and the exercises for pronunciation and articulation included in the L. C. C. syllabus of graduated instruction in singing*—the four fundamental breathing exercises—the vocal poise—the position of the hands—the "M" sound—the open mouth—the character of the movements—the control of the breath—dangers of imperfect breathing methods. Effect of breathing upon the child's physique—the remedial effects of breathing exercises. The vowel sounds oo, oh, aw, ah, ay, ee, and the double vowel sounds (i as in night, oy as in boy, ow as in cow, u as in cue). Sweet singing and speaking without strain. Raucous sounds and rigidity. Scale singing. The "head voice," and flute-like tone. The "chest" register and forcing. Placing the voice—vowels and consonants in singing. Broken voices. THE READING AND SINGING LESSON.—Healthy form of physical exercise. *Suitable breathing and voice exercises to be included in each lesson.*—Pronunciation as important in reading as in singing. Benefit of singing to the speaking voice—Voice sustaining and phrasing—Value of good tone in speaking as well as singing. The correct vocal poise. Audibility, meaning and feeling—THE TEACHER'S VOICE.—The nature of the speaking voice and the chief difficulties in using it—breath control—tone—vocal vibration—articulation. Application of scientific principles to individual voices. Individual and class work. Failure of voice from faulty use by voice-users. General exercises for flexibility and position of body for voice-users. *Vocal exercises on the "M" sound.*—The development of a flexible chest and abdomen by breathing exercises and abdominal movements—the breathing muscles (extrinsic and intrinsic) kinds of breathing for different purposes—in all cases stiffness and rigidity to be avoided—flexibility of inspiration. *Influence of breath control on tone.*—Exercises for breath control. The shape of the chest and resonance. The development of the muscles of articulation. Exercises to acquire mobility of the lips, jaw, tongue, soft palate and larynx. The resonating chamber. Exercises for the sounds of the English language. *Vowels and pronunciation.*—Pure vowels, subordinate vowels, semi-vowels, nasal vowels—influence of vowel sounds on tone—tone-placing and vowel faults—sustained exercises on vowels. *Consonants and articulation*—difficulties of articulation in regard to tone.—Connected speech. Co-ordinated movements of vocal apparatus—the art of speaking, reading and reciting—speech and song. The art of lecturing—tone, distinctness and audibility of voice—phrasing and modulation. *The management of the voice. The Instrument.*—The value of voice in the art of speaking, singing, reading, teaching, lecturing and reciting. Can an orator be made? Teachers cannot ignore voice. Bond of union between teacher and pupil. The physiological poise of the muscles of the vibratory, the articulatory and the breathing organs. Flexibility v. rigidity. *Its control.*—The abdominal press and the diaphragm—phrasing and sustaining the voice—value of the different sounds in speech and song—tone and its coloration—how preserved throughout the full vocal range. *Its power.*—Style, expression and modulation of the voice for public speaking. Grammatical and rhetorical pauses. Inflection. Pitch. Pace. Emphasis. Deliberation and animation. Kinds of voices. Audibility, distinctness and power in speech. How to address audiences of various sizes. *Its health.*—Graceful movement and animated speech. Reading aloud a healthy

exercise—the delivery of prose, blank verse and poetry. General hints on speaking. Voice faults and vocal fatigue. The hygiene of the voice and prevention of loss of voice through misuse. STAMMERING—its cause and treatment. SUGGESTION AND EDUCATION.—Defective speech. Delayed speech. Demonstration of treatment.

You will see that the line I have suggested is strictly followed.

The actual mechanism and function of speech is first briefly studied, the relationship between the body and the voice indicated.

Poise and the development and control of the respiratory apparatus form the first part of the subject.

And it is here we find ourselves so constantly in conflict with existing systems of physical training.

The jerked precision, the shrieked commands, the ill-coördinated movements; the stiffened poise; the inflexible chest movements; the constant employment of antagonistic exercises, such as the combination of arm movements with respiratory practice—these are a few of our points of conflict with the work of the ordinary physical trainer.

In place of them we want direct rhythmical exercises in chest movement, aiming simply at increase of flexibility, never at extension development only.

Rhythmic commands such as those with which the head of an orchestra attains to his miracles of rhythmic precision, rejection of all antagonistic movements in obedience to the law of reciprocal innervation quoted above.

Constant practice of smooth coördinated movements.

Variety of unexpected movement on the lines of the *Dalcroze* rhythmic training, bringing the body more and more under mental control.

Absolutely scientific corrective exercises based on the idea that normal movement is the best cure for abnormal development, not that it requires the practice of the opposite fault for its correction.

Definite practice of absolute relaxation as the surest means of acquiring light and precise movement.

Then come the actual movements of voice and tone production.

Arranged on a graduated system resulting in the triumphant accomplishment of the most exquisite coördination of which the human body is capable, the production of pure musical controlled vocal tone.

(3) The one-time problem of modern education is the avoidance of waste. There must be nothing to unlearn. I appeal to all teachers here present: Could you dare compute the number of hours you have spent in 50% of the children in your care in unlearning some faulty habit of speech?

Bad reading, divorce of words and thought, monotony, provincial or careless articulation, class accent, bad spelling, absence of language

sense, absence of adequate vocabulary, these are some of the more usual gaps left by our present method of speech training.

I claim that there shall be no break in the teaching of speech in the mother tongue. That the long and careful training given to the infant, in teaching it to speak, shall be continued straight along the years where to quote Madam Montessori: "Language is being established in the child."

Let me quote her great authority on the point.

After speaking of the pleasure children take in learning to write and of the value of graphic language as an aid to fixing words, Madam Montessori continues:

"Let us not talk of premature teaching; ridding ourselves of prejudices, let us appeal to experience, which shows that in reality children proceed without effort, nay, rather, with evident manifestations of pleasure to the recognition of graphic signs presented as objects.

"The child of 3 or 4 has already long begun his articulate language according to our scheme. But he finds himself in the period in which the mechanism of articulate language is being perfected; a period contemporary with that in which he is acquiring a content of language along with the patrimony of perception.

"The child has perhaps not heard perfectly in all their component parts the words which he pronounces, and, if he has heard them perfectly, they may have been pronounced badly, and consequently have left an erroneous auditory perception. It would be well that the child, by exercising the motor channels of articulate language, should establish exactly the movements necessary to a perfect articulation before the age of easy motor adaptations is passed, and, by the fixation of erroneous mechanisms, the defects become incorrigible.

"To this end the analysis of speech is necessary. As when we wish to perfect the language we first start children at composition, and then pass to grammatical study; and when we wish to perfect the style we first teach to write grammatically and then come to the analysis of style; so when we wish to perfect the speech it is proper to proceed to its analysis. When, therefore, the child speaks, but before the completion of the development of speech which renders it fixed in mechanisms already established, the speech should be analysed with a view to perfecting it.

"Defects and imperfections of language are in part due to organic causes, consisting in malformations or in pathological alterations of the nervous system; but in part they are connected with functional defects acquired in the period of the formation of language and consist in an erratic pronounciation of the component sounds of the spoken word. Such errors are acquired by the child who hears words imperfectly

pronounced, or hears bad speech. The dialectic accent enters into this category; but there also enter vicious habits which make the natural defects of the articulate language of childhood persist in the child, or which provoke in him by imitation the defects of language peculiar to the persons who surrounded him in his childhood.

"The normal defects of child language are due to the fact that the complicated muscular agencies of the organs of articulate language do not yet function well, and are consequently incapable of reproducing the sound which was the sensory stimulus of a certain innate movement. The association of the movements necessary to the articulation of the spoken words is established little by little. The result is a language made of words with sounds which are imperfect and often lacking (whence incomplete words). Such defects are grouped under the name 'bloesitas,' and are especially due to the fact that the child is not yet capable of directing the movements of his tongue.

"Some defects of pronunciation which concern the utterance of the vowel sound as well as that of the consonant are due to the fact that the child reproduces sounds imperfectly heard.

"In the first case, then, it is a matter of functional insufficiencies of the peripheral motor organ, and hence of the nervous channels, and the cause lies in the individual; whereas in the second case the error is caused by the auditory stimulus and the cause lies outside.

"These defects often persist, however accentuated, in the boy and the adult, and produce finally an erroneous language to which will later be added in writing orthographical errors, such, for example, as dialectic orthographical errors.

"If one considers the charm of human speech one is bound to acknowledge the inferiority of one who does not possess a correct spoken language; and an aesthetic conception in education cannot be imagined unless special care be devoted to perfecting articulate language. Although the Greeks had transmitted to Rome the art of educating in language, this practice was not resumed by Humanism, which cared more for the aesthetics of the environment and the revival of artistic works than for the perfecting of the man."

I can only give a short summary of the practical methods I personally suggest in this direction.

First the coördination of the following classes right up the school:

Physical Training.

Dancing.

Singing.

Recitation.

Story Telling.

The respiratory teaching should be the same through the Physical Training, Singing and Recitation Classes, and for controlling interest should be that of the Singing Class, nothing being allowed to be taught in any of the other classes which would be injurious to voice development.

The control of the character of muscular rhythm, should be recognised throughout the Physical Training, Dancing, Singing and Recitation Classes. Here the dancing teacher and the singing teacher should work hand in hand, and no physical movements tending to produce jerk or to develop forced and clumsy movement should be permitted in any class.

The earliest recitation teaching should go hand-in hand with folk song and folk dance and should develop rhythmical sense in speech, with its accompaniment of balanced articulatory effect.

Rhythmic jingles, nonsense rhymes, and syllabic exercises should be given a definite place in this training, and deliberately used to stimulate the muscular rhythm of articulation and its accompanying sense of keen delight.

Story-telling, Recitation and Singing should be co-ordinated to produce intimate association of intention, meaning and utterance. The first part of the training sketched corresponds to the lower development of speech, the preparation of the nerve channels and their close co-ordination with the central mechanism; which sets the auditory visual and word forming channels in relation with the motor channels—respiratory, phonological, and articulatory.

This second group corresponds with the development of the higher psychic activities involved in the perfect use of original or of reproduced speech, and finally of song and dramatic interpretation.

At every point the links in the whole chain must be made good. The teacher must be constantly alive to the growing speech needs and speech choice of the child, and must not permit the whole speech education, as at present, to be switched off into the channel of graphic language.

Reading aloud is a lost art to-day because of this mistake.

Literature and speech are divorced because of it, with results disastrous to both.

What physical results we may hope for I have already suggested.

The mental results are an extraordinary strengthening of the co-ordinative power of the brain, and a consequent gain of readiness and control in the whole mental equipment.

The reaction on memory, logical accuracy, and attention is tremendously interesting. These qualities are brought into relation with rapidity of decision and of reproduction in a way that written work will never accomplish.

Above all originality and spontaneity are enormously encouraged.

Originality because the evil effects of constant wearisome reproduction from the teacher's mind are diminished. Spontaneity because laboured correction is impossible, an immediate right control must be obtained at the instant of innervation.

This brings me to my final contention, I need not to-day ask that school hygiene shall recognise aesthetic development as part of its function.

I know no true foe to disease but vigorous health. Ugliness is a disease; I know no foe to ugliness but beautiful vigor.

I demand that we send out from our schools children in the full vigorous possession of their faculty of speech exercised where alone it can be exercised, in their mother tongue.

This means that at every stage of school life the child must be allowed and encouraged to grow in speech.

If only we teachers could hold our tongues a little and let the children speak!

Often speech assumes the unhealthy fascination of a forbidden indulgence, and like all such things grows vicious in the process.

I ask for questions, discussions, contradictions, purposely I have been aggressive and challenging to the borders of rudeness but I speak for a great cause and not its smallest interest lies in its value to the bonds of our common speech, the link that we all pray shall bind us at last in a union never before realised by humanity, the mother tongue of the whole English-speaking race.

SOME POTENT FACTORS IN THE SEEMING INCREASE IN MENTAL DEFECT

BY

ISABELLE THOMPSON SMART

Is mental defect in the school population of the United States on the increase? This query is uppermost in the minds of many of the men and women most vitally concerned in dealing with the problem of the mentally unfit.

In choosing my topic for discussion I have endeavored to approach the facts presented with an open mind. My desire was to be instructed as well as to instruct. I have found that there is a very strong belief that mental defect is greatly on the increase, however, outside of our urban districts, and taking our states at large, we do not know that this is a fact, for we have no methods or statistics whereby we may compare the ratio of persons suffering from defective mentality seventy-five or a hundred years ago with those who were actually normal.

In obtaining my data I sent out two questionnaires, one pertaining directly to the possible increase and the causes therefore; the other to secure scientific opinions concerning a particular pathological condition, more frequently of the mother, though sometimes found in the father, and its possible effect on the unborn child. My questionnaires were sent to departments of education, medical superintendents of many of the various state institutions, departments of charities, and numerous specialists in surgery. The data and opinions received were varied in some details, but in all the particular essentials *all* were agreed.

That there is a regular, proportional annual increase of defective children is to be expected, and in my own experience it is found. Our population is steadily increasing despite the cry of "race suicide;" but, unfortunately for the race, the greatest increase is largely among families where race limitation would bring about better conditions.

The congestion of population in our large cities is actively conducive to an increase of mental defect, and because of the low moral tone so often found, the illegitimate child is more frequently found here; though this mark of mental deficiency is also quite pronounced in rural sections. Very often the parents are both feeble-minded, but there are appreciable numbers of such children, the result of the seduction of feeble-minded women by men who pose as model husbands and sons, and who move in what we are prone to call "polite society." The double standard of morality has produced—and is continuing to produce—its quota of feeble-

mindfulness annually, though we hear less about this cause than we should. Perhaps the reason for the suppression of these facts is somewhat obvious to those who are awake to this particular phase of the problem, for this double standard is resorted to by many, whom, to expose, would possibly put some of the work now done for the detection of feeble-mindedness in disrepute.

Surely *all* who are interested in the possible lessening of a national disgrace should live lives above suspicion; there should be no such thing as a double standard of morals among workers for a national betterment of mental status.

The feeble-minded woman is a menace; of this there can be but one verdict, but of equal menace is the man who lives the double life; the man who consorts with the feeble-minded woman or the woman of the "red-light districts" and who takes the poison of syphilis to his unborn child and to his unsuspecting wife. Enough has not been said on this score, and somehow it seems to be little spoken of in our general considerations of mental defect—perhaps because of its close personal nature of this source of supply and the many opportunities for this to be a secret sin and frequently hard to detect, or where, as is the case of the illegitimate child which Dr. Hastings Hart has pictured, From his large experience in dealing with illegitimacy he says: "It is almost the universal rule that he—the man—is the chief offender, yet he suffers least of all." It is surprising how readily his friends lend themselves to efforts to relieve him of his obligation and just penalty. * * * These efforts are further aided by the practice of the community, which condones the offense of the man, allowing him to maintain his place in society * * * notwithstanding his cruelty."

Alcoholism, thought by some to be an effect rather than a cause, would seem almost to constitute a cause. In some half a hundred cases which have come under my observation in my private practice, all of the cases belonging to families which are "comfortably off" or "well-to-do," and whose histories, in fully one-half the number, have been traced back for five generations, the first evidence of mental defect was found in the child of the alcoholic. For instance, one family, particularly well known to me, presented the following most interesting history:

Nationality: Scotch.

Great grandparents all mentally sound—family tree showed no mental defect or "peculiar" persons on either side.

Grandparents: Whom I shall designate as the Scotch couple.

Grandfather, an only child, non-alcoholic; graduate M.D. of the University of Edinburgh.

Grandmother, a sturdy, splendid Scotchwoman, of good Highland

ancestry. Had several sisters, all of whom, so far as was known, or could be ascertained, were mentally well-balanced. The result of the union of the grandparents is as follows: Six children were born to them, four sons and two daughters. *All the sons were hard drinkers*, though all were men of good mental ability as ordinarily judged. *The oldest son never married*. He was a well-known surgeon and a *very successful physician*.

The second son was a very intelligent, keen business man in New York City, but went from bad to worse in his alcoholic excesses. Three children, two sons and one daughter, were born to his union with a fine young woman of good stock, wholly free from any alcoholic taint. Of his three children, one son died in infancy, the second son has periodical outbreaks of alcoholism, when he will be completely under its influence for several weeks at a time, then quite suddenly he will cease his drinking and remain perfectly sober for two or three months; he, however, shows weakened mentality and is in no way his father's peer intellectually. The daughter is a well educated woman, is very well known in social and charitable work, and is one of a band of women who is doing much for social uplift in the city in which she lives. She realizes very fully the possible chances of transmission of this dreaded scourge and she has persistently refused to marry. Fortunately her brother has not married, though that he leads a life of double-standard, the members of his family do not doubt.

The third son born of this Scotch union was the father of three children, two daughters and one son. His wife was a good, kindly woman, but not his equal. The daughters are both bright women, who have married; the oldest daughter has a son who is wild. His son is a confirmed drunkard, is married, and has, as a result of his union with a talented, musical young woman, two little boys. The older lad is a bright, shrewd child, one of the type termed "gifted," while the younger is sickly, but has not as yet shown any marked mental defect.

The fourth son born to this Scotch couple also was the father of three children, two daughters and one son. His wife is a very eccentric woman, but artistic and literary to a marked degree. Their older daughter died in childhood; their second daughter is a college woman, particularly bright and fascinating; she is married, but, as yet, has no children. The son is "queer" and has been married twice. Wife No. 1 had two pregnancies, gave birth to one living child, a bright little girl, and later died in her second pregnancy, was unable to give birth to the child at term. Wife No. 2 has never given birth to a living child. She was pregnant once but the birth was complicated.

Of the two daughters of our Scotch couple, the older, who was also the oldest child of the family, had *three* children, two sons and one daugh-

ter. She married a very eccentric man, very much her senior. Of her children the second son went insane, the type of insanity I have been unable to ascertain. The older son is a man who has always led an exemplary life and is, in every sense of the word, a good citizen; he has done very much good for the city in which he lives, he is a man of means and of education. Two children were born to him, both sons, university men, unusually bright, fine fellows, though the younger has shown a tendency to become somewhat "wild."

Her daughter is very eccentric, has had four children, two boys and two girls, two of whom died in early childhood, one an accidental death and the other from a contagious disease. The older of her two living children, a daughter, is very peculiar and a semi-invalid.

The second daughter of the Scotch couple, who was also the youngest child in this family of six, married a man much her senior and socially beneath her. Five children were born of this union—all girls. Three died of diphtheria during the same epidemic; the remaining two are married and mentally bright.

It is truly difficult to decide whether, in view of this accurate history, alcohol was a cause or an effect. It might seem, however, to come under that class of cases mentioned in the following quotation from Dr. Fernald, *i. e.*, "There is reason for the belief that alcoholism, syphilis, tuberculosis, and other *environmental factors may initiate germinal variation which may become hereditary.*"

In the report of the Pennsylvania Commission on Feeble-minded and Epileptic Persons, I find the following: "It is believed by some good authorities * * * that a more direct relation can be traced between inebriety and mental defect, especially in the offspring of drunken parents. Thus it has been asserted with much appearance of truth that fathers suffering with alcoholism beget imbecile and epileptic children, but this teaching has not been *universally* established among alienists."

Another cause for a seeming increase of mental defect was found in a recent study of certain isolated rural communities in the state of Massachusetts, which Dr. Fernald mentions—"The steady withdrawal of the more sturdy and virile individuals from the country to the town leaves the ineffective and defective men and women in the country to marry and beget offspring even less efficient than themselves."

In this study "Among the more vigorous families who have migrated for several generations a marked deterioration in the quality of the remaining population was found, with a large number of the feeble-minded and a notable amount of immorality, intemperance and shiftlessness."

During the last decade there has been, according to some of our most noted authorities, a greater danger from syphilis, alcoholism and

tuberculosis, which naturally are productive of mental defect, especially where the heredity is not all that it should be.

We have to reckon with types of feeble-mindedness which are due to accident and to sporadic causes—possibly chiefest of these may be the post-meningitic. As a result of the epidemic in and about New York a few years ago, I have encountered numerous cases belonging to this class. These types will always be in evidence—but they are few—the number estimated is ten per cent. of the total number—in comparison with others mentioned.

Heredity is without a doubt *the* factor of factors in causation, and I think that we will find there is absolute data to be obtained in the results of research now going on in various sections of the United States to justify the statement that fully seventy-five per cent. of all feeble-mindedness is due to this one cause.

In our urban school population, and more especially in cities where there is a large influx of foreigners, every year we have an actual and a very material annual increase in the number of children having defective mentality—indeed by far the greater number of feeble-minded boys and girls in our city schools—(New York)—are of foreign birth, while next in number are the children born in the United States, but of foreign parentage. Without a doubt, could we but get at the family histories of these thousands of little, mental derelicts, we would find that heredity was the causative factor in the production of their defects.

During the month of June (1913), I had reported to me five special cases of low grade mentally defective boys, each child belonging to different parents, yet all institutional cases. One boy is at present an inmate of the Letchworth Village, and it is a strange coincident that the mother of each of these boys is said to have died of Carcinoma during the years 1912-1913.

I was asked by the social visitor, Miss Irwin, who reported the cases, if I had any data which might establish a relationship between carcinoma as a possible cause and mental defect as a result. I immediately sent out questionnaire number two, to some score or more of our most eminent surgeons, who have been giving years of time and patient energy to the work of investigating the cause of—and, if possible, to find a cure for cancer—hoping they might be able to throw some light on this special point. The returns showed that the majority placed carcinoma as a cause in the same class with tuberculosis. I quote a part of two replies as follows:

"I have no statistics regarding the connection between mental defect and malignant disease. The question is an interesting one and may repay investigation. * * * It has for some time seemed possible

to me that malignant disease itself may be due to a local, or even general disturbance of the equilibrium of the internal secretions. Now this disturbance might result in overproduction of ectodermal cells on the one hand or mesodermal cells on the other, with resulting cancer or sarcoma, as the case might be. Corne has shown that normal plasma is not the optimum medium for the artificial cultivation of malignant cells outside of the body, but, that blood plasma diluted and changed by the addition of certain glandular extracts *is* such a medium. Hence it is conceivable that malignant diseases and mental deficiency may be distantly related in some cases, as different manifestations of a common cause, *i. e.*, disturbance of balance of the internal secretions."

Quotation No. 2. "So far as my experience goes, I could not say I have observed any relationship between mental defect and carcinoma. My own view of carcinoma is, that it is probably a parasite disease, like tuberculosis, leprosy, or actinomycosis, producing at first a purely local lesion, which later becomes disseminated through the lymphatics and eventually enters the blood, giving rise to blood metastases in various organs and tissues. This process is so similar to infections, and particularly the chronic infections as tuberculosis and syphilis, that reasoning by analogy, it seems highly probable that the diseases are of similar nature. That being the case, and cancer being an *accidental* infection of the individual, it is not likely that it would give rise in another generation to mental disease any more than any other infectious disease.

"I do not think surgeons to-day think very much of heredity in the causation of cancer."

Very many of the replies to questionnaire number one are summed up in the quotation I make from Dr. Cornman of the Philadelphia Board of Public Education.

"The most important factor in the seeming increase in mental deficiency in the schools is the discovery of these cases by attention to the problem.

"I do not believe that we have any notable increase of mental deficiency, but the attention given to the problem in recent years—tabulation of age and grade statistics, work of the Committee on Backward Child Investigation, etc., has directed attention to the numbers of cases that otherwise would have been overlooked."

In closing let me call attention again to the fact that in the suburban and rural districts, while there is a seeming increase in the total number of mental defectives, an actual ratio of increase has not been proven, while in our urban school population, especially in our chief ports of entry and in factory cities, there is an actual and appreciable annual increase in mental defectives. About three years ago, in the course of the routine

examination of 6,245 school children in the public elementary schools of New York City, some very interesting developments have become evident. In looking at the nationality of these various cases, one feels instinctively that the factor of language, *i. e.*, their inability to understand or speak English enters largely into the problem, since 53.8 per cent. of all the cases examined were foreign-born children and 30.0 per cent. American-born children of foreign parentage, but when we compare these figures with the figures of those of institution type and those needing specialized training, they take on an added interest, for among the institution cases 61.1 per cent. were foreign born and 27.3 per cent. were of foreign parentage. Among the children considered candidates for our so-called ungraded classes 52.8 per cent. were foreign born and 24.5 per cent. were American born of foreign parentage.

To recapitulate the causes most potent in the seeming increase of mental deficiency, are:

1. Congestion of population in large centers.
2. Depletion of good stock in suburban and rural communities.
3. The *un*-moral feeble-minded woman—*and man*.
4. The *im*-moral man whose sexual life has a double standard.

Alcoholism,	}	Heredity.
Syphilis,		
Tuberculosis,		

Sporadic and accidental causes.

Immigration, and

The close attention given to the problem by physicians, psychologists, sociologists, and numerous other persons and organizations interested in checking the progress of a national disgrace.

THE RECOGNITION OF SPECIAL TYPES OF SCHOOL CHILDREN

BY

FREDERIC J. FARNELL

It is the object of this paper that your attention shall be called to a type of child whose mental inferiority is the distortion of a personality serving as a basis in which emotional and volitional concepts deviate markedly from the normal.

In the study of these psychic factors at work in children, a clear conception of physiological and psychological phenomena are necessary. There is no one or even series of procedures that will definitely determine the situation.

However, when possible it is of extreme value to consider the family history for at least three generations. This should be followed by a personal history in which is incorporated a complete analysis of the child's personality. This should include not only his intellectual ability, but also his output of energy in work and play. One must watch his habits of activity and consider his attitude towards himself and others, as well as his reaction to his attitude towards himself and others. His moral standards and his general cast of mood should be investigated. At what level is his adaptability and how does he cope with the problems of everyday life? Size up his position towards reality and watch his reaction to the sex problem, as well as its balancing factors, all to be compared with what is considered a normal personality. It may be said that the character and activities of the mind are embodied in the features and reactions of the organism.

Defects in the psychic are not always accompanied by defects in the intellectual mechanism, although that field is frequently handicapped, but may be due entirely to other disturbing elements. To quote from Karpas, "The psychic constitutionally inferior is an individual defective, either in the emotional or intellectual sphere; more than one sphere may be effected. As a result of this, there is a loss of mental equilibrium to such an extent as to make one incapable of adjusting himself to environmental influences."

The avoidance thus far of the value of physical defects is purposeful when one realizes that a large percentage of retarded children, having excluded actual cases of imbecility, are defective personalities. As a result, that period of the child's life, puberty, when strain and stress, conflicting and imaginative thoughts and habits attended by serious consequences, when he should adapt himself to possibilities and impossibilities, may have a direct effect upon his ability to learn.

From these facts it will become clear why antisocial tendencies develop and why almost without exception they end in crime, vagrancy, prostitution or insanity.

The flaws and weaknesses of an engine or a machine are unknown until the test to be elicited only by the efficient mechanic or expert whose adequate knowledge will demonstrate its weaknesses and limitations. So it is in dealing with the problem of retarded children, their weaknesses in adaptability and limitations in mental capacity are only recognized after adequate observation, at which time proper readjustment and balancing material may be of value.

Many classifications can be had in the grouping of these children, but the one here referred to is an amplification and modification of several. In the first group, the so-called psychopathic inferior, are those cases in which there is a lack of emotional balance and a twist in their mental make-up, serving as a basis for future tantrums, attacks of excitement and perversion of instinct. That many of these children when grown up, are unable to cope with the problems of life, is shown by the number of admissions, not only to the reformatories but also to the prisons, poorhouses and hospitals for the insane. There is no doubt but what a large majority of the criminals, vagrants and prostitutes and so-called "black sheep of the family" may be included under this heading. When committed to reformatories and prisons, it is the result of an episode consequent upon their mental inferiority. When sent to the poor farm, it is the reaction to a bad environment and the craving for those unnecessary accessories of life, such as alcohol and perversion of sex. And when committed to the hospital for the insane it is their faulty method of meeting difficulties. They shrink from responsibilities and the daily routine proves too much for them. This serves as a ground-work, on which depressions, excitements and paranoid trends may develop.

In the second group are classed the disturbances of affectivity, including the hysterical and predementia make-up. The hysterical personality evinces an instability of emotion usually of a hyper-affective type. They are easily alarmed, readily upset and their nights are disturbed by dreams of a worrisome and terrifying nature. They frequently have fainting spells and occasionally are subject to convulsions.

The dementia praecox personality has a distinct marking in both the beginning and developed stages. They are quiet and seclusive, not good mixers, and avoid the opposite sex. They are shy and bashful, reticent and non-confiding, but faultfinding and hard to influence. They live in a world of fancies, are extremely imaginary and are considered "day-dreamers." With this so-called "shut-in" personality (Hoch) as a basis, the individual then "turns within himself." He

loses his energy for direction and ambition and becomes decidedly pre-occupied. He becomes more and more irritable and compares himself to his brothers and sisters usually on a moral basis. Soon forgetfulness, which is only apparent, fantastic ideas and notions begin to set up a defense in which the actual annoyances of life are ignored.

In looking over the records of several hundred of such children examined during the last two years, the recognition of these types of children has yielded a fairly large percentage.

Reference to typical examples may not be amiss.

A child of 12 years whose father is markedly alcoholic and whose mother is feeble-minded was born normally and walked and talked at an early age. She wet the bed and had frequency of urination during the day. At a very early age she was in constant association with the opposite sex. Her mother states that when a small child she had worms and that she was in the habit of scratching herself in the perineal region. Masturbation has been observed, but sexual lapses were not noted. As she grew up she became extremely nervous, unstable emotionally and frequently had tantrums of excitement during which time she would attempt to squeeze and kiss incessantly any child who happened to be nearby. She lied, she stole, she was disobedient and untrustworthy. She was destructive and hard to manage. At school she could not be handled in the regular class. The ungraded or backward classes were unsuited for her. She is not feeble-minded but has a twist in her mental make-up, producing a mental inferiority, which unless proper balancing material can be given, her destiny can be foretold, for she will either become a criminal, a prostitute or insane.

Let us now pass to the second type equally in danger. In olden times these children were looked upon as being "innocent," "bashful" or as a "perfect child" or a "model child."

To illustrate: A girl of 16 years having only reached the fifth grade, was referred for examination. Her parents are alive and in good health. She had an aunt and two cousins on the maternal side insane. There was nothing abnormal about her birth or early childhood except that she was always nervous and bashful. She got along well the first four years at school, then she became what was called "lazy," she cried a great deal, and could not keep her mind on her work. At thirteen she passed through puberty, following which she became quiet, seclusive, non-confiding, but at the same time somewhat inquisitive and curious. She lost her energy for direction and became further handicapped by her comparison with other children and her feeling of being at a disadvantage. Should she be allowed to fail completely and as will undoubtedly follow become mentally deranged, or should she be placed in a proper environment and efforts deservedly made to effect a readjustment?

This surely implies immediate care and protection and the affording of proper readjustment to correct their faulty mental habits.

Maudsley once said: "That one or two things must happen to an individual in this world if he is to live successfully in it; either he must be yielding and sagacious enough to conform to circumstances or he must be strong enough, a person of that extraordinary genius, to make circumstances conform to him. If he cannot do either, or cannot manage by good sense or good fortune to make a successful compromise between

them, he will either go mad, commit suicide, become a criminal or drift a helpless charge upon the charity of others."

When one has entered this immense field of diagnosis, he is brought against a problem, not only of how every child is to be suited individually but also what is behind that difficulty which has to be suited. One will run far short in these few words of demonstrating the very complex methods of approach and cure of these special types of children, but special stress must be made upon the fact that one must study their mental traits and realize that knowledge must not only be one of doing things but also of being ready to do things, for when doing something becomes less attractive and less interesting than the knowledge, an opening for a failure is apparent into which one easily falls.

The greatest hinderance to these children is the training which does not, with all the possibilities at hand, distinguish the real defective from the apparent, but which contents itself with the fact that laggards at school must be defectives.

This has formerly led to sizing up the conduct of the child upon a moral basis and it was met with methods of moral training and punishment on a doctrine of "laziness," "didn't give their mind to it," "stubborn," or what not. But if one makes the child's reaction appear as part of his adjustment to his environment, or a response to some demand, the why and wherefore of the disturbance becomes more approachable.

New ideas and interests are not independent occurrences but dependent largely for their intensity and even their existence upon former mental trends. Harmony between the different components of the mind must be induced and those influences that act upon him, guarded in such a way as to allow that freest scope possible for the development of those capacities that will make him a useful citizen. Cultivate the instincts of play and pleasure with plenty of diversion, induce conditions for decision and action to be promptly corrected at times of mistake and properly rewarded at times of achievement.

One must further his aim to find levels of capacity and activity. Do not stop with the mere finding but continue to make the way sufficiently attractive and full of meaning to the child to bring him to a field of safety, for once he has reached his level he can easily manage for himself and be perfectly safe to self and society.

Investigators are coming to recognize a psychic evolution as well as a physical one—the part which the unconscious plays in this evolution is now thought to be far greater than was ever heretofore acknowledged. It thus becomes the imperative duty of all educators to follow this course of development and work with the current of psychic evolution and not against it, incorporating in this evolution any such physiological and biological facts that might be necessary.

RECOGNITION OF MENTAL DEFECT IN THE HIGHER GRADES

BY

WALTER E. FERNALD

Many factors have contributed to the present keen interest in everything pertaining to the feeble-minded, both in Europe and in this country. The realization of the vast extent of mental defect, the inexorable requirements of the modern graded school systems with the study of the resulting retardation, the significance of feeble-mindedness as an antecedent and cause of delinquency, crime, pauperism and other social diseases, the popular application of the Binet and other psychological tests and the comparatively recent discovery of the markedly hereditary nature of feeble-mindedness, are some of the causes of this interest.

Feeble-mindedness has become a subject of vital and pressing significance to physicians, teachers, court officials, social workers and legislators. The subject is being studied from medical, biological, pedagogical, psychological, sociological, economic and eugenic points of view.

The field of mental defect has been so broadened and extended as to include large groups of persons who would not have been so included even a decade ago. Naturally this extension has been almost entirely in the higher grades of defect.

A medical diagnosis of feeble-mindedness is necessary before a case can be properly or legally considered with reference to care, treatment or prevention. The practical importance of this pertinent subject is the excuse for this paper.

During the past twenty years over 3,000 cases of suspected mental defect (an average of three a week) have applied to the Massachusetts School for the Feeble-Minded for diagnosis, prognosis and advice as to treatment and care. These patients were generally referred by physicians, charity and social workers, child-helping societies, court officers, etc. As a rule the cases seen in this out-patient work are of the high grade "moron" type, often not obviously defective. Often a wide difference of opinion has been expressed by different physicians. Some of the cases have a criminal or court record. Cases of ordinary evident feeble-mindedness are not usually so referred. These cases evidently differ from the general run of presumably defective persons presenting themselves to a school physician or to a general medical clinic.

In this class of cases, a diagnosis is usually sought for the purpose

of deciding the patient's future. Is he normal or mentally defective? Is he able to attend the public schools or to go to work? Will he eventually be self-supporting? Shall he be held responsible for his criminal or immoral conduct? Is he a suitable case for adoption? The question of the suitability for marriage is sometimes involved. The diagnosis is of enormous importance to the patient and to his family. A wrong diagnosis is embarrassing to the physician and tragical to the patient.

The diagnosis of ordinary cases of idiocy and imbecility is a simple matter. Even the high-grade cases occurring in childhood present few difficulties. The upper levels of the so-called moron grade as seen in late childhood, and adolescence, are often most perplexing and difficult.

An accurate and incontestable diagnosis of one of these borderline cases can be satisfactorily made only after a thorough physical examination of the patient, knowledge of the family history, personal history, especially the story of his infancy and early childhood, school history and records, social and moral reactions, sexual habits, emotional stability, associates, interests, and the fullest inquiry as to his general information and practical knowledge. Appropriate psychological investigation by formal tests is especially indicated in these doubtful cases. The recent literature of the subject abounds in most elaborate and voluminous syllabi for routine examination and record, but a simple record of significant positive and negative findings is the most practical for diagnostic use. More than one examination is often required. It may be necessary to place the patient in a selected environment where his behavior and reactions may be carefully watched by a competent observer for a period of weeks or months before a final diagnosis and prognosis can safely be made.

A carefully written history of the case, prepared in advance by the parent, social worker or physician, saves time and often presents facts which otherwise would be omitted or distorted. This statement of the case should include the reasons for thinking the patient mentally defective.

A physical examination will reveal any existing deformities and abnormalities—paralyses; scars, or other evidences of injury, especially to the head; the condition of the eyes, skin, hair, thyroid gland and sex organs; evidences of syphilis, rickets, etc. Height and weight with reference to the age is of importance. The circumference of the skull and the cephalic index should be noted.

The presence or absence of certain physical degenerative stigmata is significant, such as abnormalities in the size and shape of the cranium; abnormal variations in the size, shape and relative position of the ears;

facial symmetry, disproportion and lack of expression; the form, situation and structure of the teeth, etc. One or more cranial or physical developmental defects are generally found even in the slighter degrees of defect, especially if the case is of hereditary type.

Even the highest types of mental defect usually have a certain degree of defective motor ability, as shown by awkward gait, clumsy movements and bodily attitudes, and a lack of alertness and dexterity. They often lack the physical grace and charm of well-formed normal youth. The performance of a sequence of movements requiring precise muscular co-ordination adapted to the age and apparent mental ability of the patient will show his co-ordinative ability.

The general personal ensemble is worth considering. The physical appearance, facial expression and attitudes, and the general bearing of the patient are factors to be noted. As a rule mental defectives are not physically attractive or pleasing in appearance. A bright, alert, active, well-formed attentive youth is usually not feeble-minded. The general impression of associates and neighbors of the patient as to his mental efficiency or inefficiency is often illuminating.

It should be remembered that no family history almost always means a bad heredity. The family history should be verified and amplified by someone outside the immediate family. The modern social worker has greatly simplified this part of the problem. There is a strong tendency on the part of relatives to suppress the suggestive existence in the family of other cases of mental defect, epilepsy, insanity, specific disease, criminality, immorality, social and economic inferiority, etc. Such vicarious manifestations of family inferiority are most significant in view of the fact that presumably 80% of defectives come from feeble-minded families.

The personal history, if obtainable, should chronicle injuries or accidents at birth, the order of birth (whether first or last child in family), diseases, accidents, convulsions, the age at which patient was able to sit up, to stand, to walk, to button clothing, the age at which he began to talk, the time when the first symptoms of mental defect were noticed, etc. Some cases with very slight mental defect are persistent bed-wetters up to adult life.

The unmorality of the feeble-minded is proverbial. The ability to appreciate in theory as to what is right or wrong is not applied in practice to their own conduct and actions. Inquiry should be made as to a history of general moral insensibility, untruthfulness, theft, cruelty, destructiveness, truancy and vagrancy, etc., in varying degrees. The presence or absence of sex precocity, sex perversion and sex immorality is very significant. Allied to the unmorality of the high-grade imbecile are the various anti-social tendencies often expressed by self-

ishness, egotism, excessive vanity, absence of shame, general incorrigibility, lack of affection and lack of sympathy.

The pedagogical history as shown by a detailed account of school life and progress is most important evidence. The school record will tell the age at which patient began to attend school, the number of years in each grade, the present grade, school performance, with samples of his written work, and often a full and detailed account from his teachers of his successes and failures. Lack of educational advantages, unfamiliarity with the language, absences from school due to truancy, illness, or lack of interest on the part of the parents, have a bearing on the rating of the school performance. As a rule, the family blames the teacher or the school for the retardation. The teacher's report will usually tell a story of inattention, lack of ability to discriminate, or want of sustained interest and application. Retardation amounting to three years below the age grade, with no handicap of ill health or unfamiliarity with the language, etc., is strongly suggestive of mental defect.

The social reactions should be carefully noted. Has the patient made good socially for his station in life? As a child, did other children accept him as a playmate on terms of equality? Was he teased, or abused, or "picked upon" by other children, especially by those younger than himself? Is he annoyed and teased by his fellow workmen? Does he associate with his social equals or with his inferiors? Does he associate with and play with younger persons? Does he make friends easily? Does he attend church and Sunday-School? Did he at the usual age receive First Communion, or Confirmation, or its equivalent? Does he observe the usual amenities and social conventions of his station? Is he treated as politely as other young men by young persons of the opposite sex? Does he attend and take part in parties and other social occasions?

The practical personal examination of the patient for subjective criteria of mental capacity and ability should be conducted without the presence of parents or other friends. And here again, no formal syllabus can define the line of inquiry to be followed in a given case. The queries must be varied to fit the age, sex, educational, social and environmental advantages, personal interests and experiences, personality, degree and type of defect, etc. If the patient is cordially put at ease and encouraged, he will usually tell all about himself, his sports, work, friends, hopes and plans. The city gamin and the country boy will have entirely different interests. Girls are likely to have had meager view-points and opportunities. "Boarded-out" and "charity" children as a rule have barren experiences to draw from. Medico-legal cases may have been carefully coached not to know or not to remember.

Incidentally, the inquiry should demonstrate the patient's power of attention, judgment and common sense, veracity, discrimination, constructive imagination, etc., as well as his stock of general knowledge and information, and actual scholastic ability. Does he know what he ought to know, and can he do what he ought to do?

The following questions, always varied or modified to suit the particular case, only indicate the general line of inquiry likely to show the mental capacity and ability. The answers elicited will suggest further queries:

How old are you?
 Where do you live?
 Is it a city or a town?
 How far from Boston (or the nearest large city)?
 What is the railroad fare from Boston?
 What towns are near your own town?
 What year were you born?
 How old are your brothers and sisters?
 Name some large cities in Massachusetts.
 What is made in Lynn, in Lowell, in Waltham?
 Name some rivers in Massachusetts.
 Name some mountains. Where are they?
 Who is Governor of Massachusetts?
 Who is President of the United States?
 Do you read any newspapers? Which ones? What departments?
 What news in the papers recently?
 What books have you read? Tell the story of one.
 How high is this door?
 How tall are you?
 How much do you weigh?
 How long is this pencil?
 Who is the King of England?
 Do you play baseball? What position?
 Did the Red Sox win yesterday? What was the score?
 Who was the pitcher?
 What was your mother's maiden name?
 What did you see on your journey this morning?
 What job would you like?
 Where have you worked?
 Why did you leave your last job?
 What do you like to do best?
 What wages did you get?
 What wages does a carpenter get? A cook? A waitress? etc.
 What does a pair of shoes cost? A hat? Gloves?
 Name some flowers, vegetables, animals.
 What size shoe do you wear?
 Describe streets, mills, buildings, etc., in your town.
 How long would you boil an egg?
 How long would you bake a potato?
 How much does a baseball cost?

The scholastic ability should be actually tested by ordinary examination in the studies of the usual school grades. The patient reads from a school book and copies a story. Oral and written sums may easily be devised to measure his arithmetical ability. All grades of mental defect show poor arithmetical skill. They may add and multiply, but usually subtract with difficulty. They may do short division, but few can achieve long division, except after long training. Any practical arithmetical computation at all involved is quite beyond the brightest defective. Few can solve the problem: "If I give you a dollar and you go in town on the electric car and pay your fare in and return, and buy stamps for three letters, how much money will you have left?" He may know the amount of the car fare and the price of stamps, but he cannot do the sum.

The general scheme of inquiry and examination so far described was in general use before the application of psychological tests for estimating mental efficiency and capacity. Definite psychological tests in some form are now an essential and practical part of the examination of suspected cases of mental defect, especially with the higher grades.

The Binet tests, in the hands of competent examiners, usually corroborate the results of clinical examination in the recognition of all degrees of mental defect in children under ten, and of pronounced defect in older persons. These tests are not so effective in detecting slight mental defect in world-wise adolescents and adults. In other words, the Binet tests corroborate where we do not need corroboration, and are not decisive where the differential diagnosis of the high grade defective from the normal is in question.

The Binet tests are not supposed to furnish an index to the *education* of the individual, but to measure his *capacity for education*. But would not many ignorant normal persons fail to be able to tell the difference between pleasure and honor, evolution and revolution, event and advent, poverty and misery, pride and pretention, as required by the adult test?

The revised Binet tests require a person to listen to the following story, and then to repeat its substance:

"One hears very different judgments on the value of life. Some say it is good, others say it is bad. It would be more correct to say that it is mediocre; because on the one hand it brings us less happiness than we want, while on the other hand the misfortunes it brings us are less than others wish for us. It is the mediocrity of life that makes it endurable; or, still more, that keeps it from being positively unjust."

The words "mediocre" and "mediocrity" are usually unfamiliar to any person likely to be examined for mental defect.

The Binet tests are psychological experiments and to give results

of definite value should be conducted with all the precautions against error which are observed in other psychological experiments. There is still some question as to the invariable fairness of these tests, in subjects with which the patient has had no practical experience, as a measure of native mental ability. The mere appearance of the unfamiliar apparatus or test material may so confuse the patient that he will not be able to do himself justice. The results of any formal tests should accord with clinical findings and with pedagogical measurements and social and economic reactions. The determination of mental defect cannot be made by the automatic application of any method and scale. In the borderline adult cases the Binet tests are of value as *additional evidence*, but they are not conclusive and should not be relied upon in the absence of clinical and other evidence.

The layman, especially the social worker and the teacher, is profoundly impressed with the findings of any formal tests. The facility with which the pronounced case of mental defect can be roughly indicated with these tests is largely responsible for the present great popular interest in feeble-mindedness.

The Binet tests are most effective as first aids to teachers and social workers in selecting suspected cases to be referred to the physician.

A bit of personal experience illustrates the difficulty of eliminating irregular test conditions, and the futility of absolutely following any system of scoring. On one of my out-patient days, I had examined eight patients, one after the other. I had no luncheon and was fatigued physically and mentally. At 5 o'clock a social worker insisted that I examine, as I had agreed to do, her 15-year-old patient. I pleaded weariness and disinclination, but finally decided to give the Binet tests. The patient had waited hours for her examination and was tired and unhappy. After much effort she utterly failed to achieve the 10 or 11 year Binet tests. I declined to give an opinion, but made another appointment for the next morning, when, after the patient had been put at ease and got acquainted, she readily tested up to her full age. The result the night before was really a record of my own mental state.

Healy has formulated a tentative series of psychological tests for the estimation of native mental ability and the results of formal education in adults and adolescent delinquents not definitely feeble-minded. They are of great practical value in demonstrating various shadings of the borderline zones of mental defect, as well as certain types of delinquent personality not yet generally recognized as variations of mental deficiency or of limited responsibility. The generalizations from the application of this admirably flexible and comprehensive method of examination should furnish data of great value in diagnosis and classification.

The differentiating tests of Dr. G. G. Fernald form another notable addition to the methods of scientific precision for the diagnosis of variations of lesser mental defect as found in adolescent delinquents, presumably differing in no way from the degrees of defect in non-criminal individuals.

Dr. Healy and Dr. G. G. Fernald both emphasize the fact that the application of psychological tests should not constitute the exclusive method of examination, but that it is one method available among others, and to be supplemented by them. Indeed, as Dr. Fernald says, in the present state of our knowledge any attempt to classify any group of subjects based solely on the findings from psychological tests, would commit grave errors.

Practically all of the special tests for the diagnosis of doubtful cases that are not decided by usual tests are of doubtful value because no age norms are given, and no practical method of scoring worked out. We can draw no exact conclusions from the results of tests in any given case when we do not know what results we would get with these tests on normal persons. Absolute standards should be used with great caution. There are many grades of intelligence among normal people. Normality of intelligence is not a fixed strength of intellect, and feeble-mindedness is not merely a question of intelligence.

The psychologists have been so interested in the diagnostic application of the Binet and other tests that while we are now familiar with certain rather empirical negative age standards and landmarks applicable to children and to cases of pronounced defect, we still possess no really scientific understanding of the exact psychological status of the ordinary cases of feeble-mindedness. We know that these different groups are, in varying degree, low in the power of voluntary attention, in discriminatory power, in constructive imagination, etc., but we know this only empirically, not in terms to be expressed qualitatively and quantitatively. The psychology of mental defect is yet to be written. The patient work of G. E. Johnson, Kuhlman and Norseworthy along these lines should be followed up by intensive psychological study and analysis of a large series of carefully selected cases. This work can not be done adequately in a small institution laboratory but requires the personnel and the resources of the psychological department of a great university. Such research would accumulate data for generalizations which would form a basis for the formulation of tests of enormous value in the diagnosis of puzzling borderline cases, especially of the borderline class. It is probable that the scientific mind will not be content until these upper zones of mental defect have been explored and charted and definite diagnostic tests evolved.

From a clinical point of view the borderline case of the "moron" grade differs from the case of actual imbecility quantitatively rather than qualitatively. Even in cases with very slight mental defect some of the cardinal symptoms and conditions of imbecility are usually found in lesser degree. There are generally evidences of physical inferiority, certain physical stigmata of degeneracy and defective muscular co-ordination. There is usually a history of delayed dentition, late walking, delayed speech and relatively long continuance of untidy habits. The patient lacks the appearance and expression of normal mentality. There is usually a history of mental defect or disease in the family. Unmoral and anti-social tendencies are rarely absent. There is a history of school retardation and poor scholastic ability on examination, with special difficulty in arithmetical and practical computations, and lack of general knowledge and information. The patient is unable to apply himself continuously in any one direction and is willing to risk severe penalties for some very small gain. His actions and conduct indicate a lack of good common sense.

These facts and observations may usually be corroborated by psychological tests, but there is no justification for the popular belief that a psychological examination alone will quickly, accurately and fully determine the degree of mental efficiency or inefficiency, educational and social needs and the prognosis of patients who have puzzled and baffled parents, teachers, family physicians and alienists.

Not all or even a majority of these various physical, psychical, social ethical and economic stigmata are likely to be found in every case of actual mental defect of the higher grade. Mental defect has not yet been proven to be an homogeneous entity. The various signs and symptoms are found in infinite variety in varying degree and proportion in different cases. Certain persons who are not more than one year retarded as shown by the Binet tests are undoubtedly so mentally deficient as to be obviously "incapable of managing their own affairs" as shown by their long continued social, ethical and economic failures.

A given case must be finally decided after a careful weighing of all the evidence which any reputable method of examination and weighing can furnish.

The Binet tests assume the twelve year mental age as the upper limit of feeble-mindedness because observation and test showed that people of any higher intelligence are usually able to float in society. And, after all, the ability of a man to earn a living, to maintain himself independently in the station of life in which he is born is the one supreme test of mental normality. If a man can secure a paying job and keep it, and satisfy his employers, it is extremely unlikely that he is mentally defective. In cases which cannot be definitely decided, the patient

should usually be given the benefit of the doubt and allowed to work out his own problem under the best conditions attainable.

In these practical generalizations from the study of a large number of cases, the writer has sought to indicate the general lines of investigation which have been found useful and necessary rather than to enumerate all the signs and symptoms of mental defect which were revealed, or to present a mass of formal statistics.

SOME UNUSUAL PHASES OF CHILD HYGIENE

BY

MARY SUTTON MACY

Child hygiene is a very large topic, and as was pointed out last September, at the Fifteenth International Congress on Hygiene and Demography held in Washington* one that is too little considered as a real entity separate from school hygiene and other subdivisions of the general science named for the goddess of health. There are, however, certain phases of child hygiene apparently so consistently and persistently ignored as to constitute a genuine danger to the progress of the race, as well as to the health of the child, and it is to some of these that I desire to attract your attention for a few moments to-day.

We hear considerable from psychologists and others, infected by what I am tempted to call "psychologitis," about mental hygiene of childhood, and from certain sources within the last few years we have heard and read, almost *ad nauseum*, much about the mental and nervous effects of sexual psychic trauma in infancy and childhood. So violent has been the epidemic of Freudism in this country recently that the perfectly good term "psychic trauma" is in danger of becoming restricted in its meaning to the sexual character, so prominent in the present expositions of the Freud school.

One of the unusual phases of child hygiene to which I would call your attention is that of protecting the growing child—not only the infant but also the youth, the pubescent and above all the adolescent—from the ill effects (physical as well as mental) of psychic trauma, which are not by any means all sexual.

It has been my fortune—or misfortune—recently to see a fairly large number of cases in children from ten to eighteen, initiated by a psychic trauma, which so closely simulate a beginning Basedow's Disease as to be indistinguishable from it, and yet most authorities on Basedow's Disease place its maximum chronological appearance at a much later date. It has also come within my recent experience to have some cases of well developed Basedow's in adults with histories pointing to earlier occurrences of the diagnostic tachycardia and tremors, usually between the fourteenth and eighteenth years, following immediately upon some mental—occasionally, too, mental and physical—shock to the individuals during their early adolescence. In none of my cases has the initial shock been in any way sexual, though in one, at least, of the

*Macy: Section on Child Hygiene.

adult cases there has later appeared a superimposed hysterical synthesis of a sexual nature which rose from a sexual trauma of quite recent occurrence compared to the Basedow's history, and for which no psychoanalysis I have been able to obtain gives any infantile history for a basis.

Recently also there have come under my observation about thirty cases of chorea having a history of psychic trauma, in no way sexual, as the point of origin for the really neurotic symptoms. I do not wish to suggest that I consider a nervous shock as the sole origin of chorea—nor for that matter of Basedow's Disease—but I do wish to call attention to the contributory effects thereof in initiating both of these nervous conditions and to sound an alarm that the child hygienist may heed in helping to prevent the nervous and psychic trauma of school life.

Perhaps a few words here on what I should like included in the understanding of my use of the phrase "psychic trauma," would serve to make this paper more helpful in a Congress on School Hygiene. I have already protested against the restriction of its use to the sexual trauma, though they, of course, within limits, do play an important role, but to me psychic trauma is an inclusive term embracing all nervous shocks which temporarily or permanently, suddenly or slowly, arrest or retard mental processes or trains of thought.

Under such a definition the term includes acute shocks from fright, anger, grief, joy, fear, etc., and also more, may I say, "chronic" shocks from repeated disappointment, from psychic strain of mental fatigue due to physical inefficiencies, such as result from undetected or uncorrected defects of vision, hearing, etc., and other contributory physical causes of retardation.

Both the morbid conditions I have cited, *i. e.* Basedow's and chorea, are prone to appear in children of more or less markedly neurotic temperaments, if not also of neurotic heredity. Someone has claimed that the neurotic temperament, as contrasted with the phlegmatic and the sanguine, is the temperament that rules the world. Our school curricula often appear based on this theory with the added belief, not always in the background, that the nervous temperament will stand a deal of pressure. We frequently hear it said "the type is so wiry, resistant and strong, even though somewhat delicate in appearance," and so the tendency arises to overcrowd or to keep the child supplied with all the new mental pabulum he seems capable of absorbing, regardless of the correlations which should exist between mental and physical development, on the theory that the nervous temperament, if it is to rule, must be broadly educated on a wide range of topics.

If this policy of our schools, *i. e.*, to crowd the curriculum and press

the children forward as fast as they can be forced, is really a fact and not only an apparent effect, it is to be strongly condemned, because it is not only a detriment to the immediate health of the children, but it is also a danger of no small consequence to the nation, since it tends to produce mental and physical inadequacy and faulty balance in the future fathers and mothers of the nation.

Chorea has long been considered a disease of childhood and authorities are still lacking in unanimity as to its true cause, as well as to its treatment, but surely we, as a people, should be intelligent enough to acknowledge the danger of maintaining any system which yields a patently contributory cause to its production.

Basedow's Disease on the contrary has been considered a disease of adult years, though my own experience leads me to consider it a disease of late puberty or early adolescence, with a tendency to subsequent periods of latency and recurring exacerbation.

Both diseases are aggravated, if not more or less indirectly caused, by psychic trauma, either acute or chronic. Therefore, in my opinion, it behooves us to be on guard to prevent all obvious causes of nervous strain and irritability which lie within the control of our public school authorities. It is an unfortunate fact that the majority, if not a practical unanimity, of those in immediate charge of our schools to-day are absolutely unintelligent on the vital subject of caring for the health of the child.

Medical school inspection, where enforced, has done much to abolish epidemics and control the morbidity from contagious diseases; it has done practically nothing to control the morbidity and to prevent disability from such preventable causes as over pressure, crowded curriculum and nervous strain during puberty and early adolescence; and it has done very little, and that only in the most wide-awake centers, to obviate retardation from preventable or remediable physical defects and inefficiencies.

It is my opinion, after a number of years observation and careful study of this problem in several countries, as well as various parts of our own country, that the prime cause of this lack of results on the part of medical school inspection, is largely lack of intelligent coöperation between authorities, and lack of education.

In my own city much energy is constantly being wasted through the bickering and ill feeling arising from division of authority. Medical school inspection is under the direction of a very efficient Child Hygiene Department of the Board of Health, but there is little or no coöperation, in fact, though there is theoretically a perfect system in coöperation, in the schools between the principals and teachers under the Board of Education and the physicians and nurses under the Board of Health.

The former blame the latter, and vice versa, the heads of the school system put the blame on the divided authority; the heads of the Health Department claim that the school authorities do not insist on coöperation but offer destructive, not constructive, criticism of the work done, and that the working staff reflects the attitude of the superior authority. Be this as it may, a recent episode shows a similar attitude of unwarranted criticism in the Department of Health Division of School Hygiene. For seven years a most excellent, constructive work for the medical and school care of nervous and mentally defective children has been conducted under the Board of Education. Recently the Board of Health examined children in a few of these special classes and declared that there were children there who were not mentally defective and also offered further criticism of the medical work done or undone in this field; all this, on the strength of one series of examinations of children in the classes, and regardless of the problems facing that Department of the Board of Education in the general school system, also in the face of the constant claim put forth by the Child Hygiene Division of the Department of Health that their appropriations from the city are insufficient to provide an adequate force for the examination of *all* children in the public schools. The question naturally arises therefore in the mind of the outsider, "Why this gratuitous work of criticism, and duplication of medical work done, and admittedly well done by the Board of Education?" So it goes, the blame for the inefficiencies in the real work is thus laid to "division of authority," but a brief glance at any other number of places where such division of authority does not exist gives us similar results. The contagions are brought under control, the physical and mental deficiencies are causes of anxiety and inefficiency in the health work and in the school work, the results of strain—nervous, mental and physical—are obvious and unchecked, and either the schools or the medical inspection or both are unsparingly criticized and scathingly declared incompetent.

The facts, as my experience shows me, are these: The medical inspection system is as competent as unintelligent medical inspectors and nurses can make it; the school system is as competent as unintelligent teachers and supervisors can make it, but is there any real excuse for this widespread unintelligence lasting into the future, or for its existence to-day?

Medical inspection in schools is comparatively a new thing and it was to be expected that the early doctors interested in it did not know anything about the theory and practice of pedagogics and kindred subjects of the science of teaching, but we have no adequate excuse in these enlightened days, for placing the medical inspection of our schools in the hands of fresh and inexperienced medical graduates, who

know little or nothing of genuine practice, even though chuck full of theory, of the science of medicine, and much less of the science of education.

Scientific education of teachers for their vocation is also somewhat a new thing but it, assuredly, is old enough for some appreciation to have arisen in the mind of educators that the teacher must know something of the child as well as the subjects to be taught the child. As evidence of this, we have in our normal schools and colleges, courses in psychology and in child study, but, alas, we are still inexcusably lacking in courses in child hygiene and practical physiology.

When teachers and principals and educators generally know more, and know it practically, about the child to which they have to adapt the workings of their scientific theories of education; and when the physicians and nurses who have medical school inspection under their supervision know more, and know it by practical experience as well as by theory, about the science of education to which they have to adapt their knowledge of the child and of disease and disability prevention, then we will have not only a more ideal medical school inspection, but also a more ideal curriculum, less nervous strain and consequent psychic trauma with their resultant ills to the children, and we will hear less—much, much less—about the inadequacy of the schools and of medical inspection, and we will find that mutual recriminations between Boards of Health and Boards of Education are things of the past. Let us all coöperate to such an end, and begin by insisting on a higher standard of educational requirement for the doctors and nurses, as well as for the teachers and principals who have under their direct control the hygienic, and pedagogic care of the nation of the immediate future.

CHILDREN'S SUPREME COURT

UNIFICATION OF CHILD WELFARE FORCES

BY

SIEGFRIED BLOCK*

The problem of the care of the exceptional child is so tremendous that in order to properly do justice to it each case would obviously involve so much intricacy on account of the many individual characteristics and each would demand its own investigations and treatment. The hundreds of phases of personality would entail close study by experts and ultimately each child would have to be sent to a different institution. Such might be the supra-ideal and impractical state which would be forced on mankind.

To be of real practical value to the largest proportion of individuals, the writer desires to emphasize that there should be some one Board of sufficient number appointed or elected who should control the future of all children. This Board should have full power to treat any case in all its phases. The child labor laws, the truancy laws, the physical defects, improper guardianship, orphan asylums, custodial institutions, reformatories, special schools, religious schools, charities, and every other organization that has in any way to do with children should be under this one supervisory Board.

Responsibility would be placed on one body and there would be no shifting of duty or blame. Statistics of all kinds could better be compiled for comparative study and the expense of running one main bureau would not be so large as when several are working and intercrossing their data. It is a fact that in all countries the statistics for children are only for a part of the entire children's population. The question of proportions are very liable to cause an error great enough to order the conclusions. Under the new scheme reliable experiments could be tried engross. The public would know definitely (by the reports of this Bureau) what is actually taking place without having to study just exactly to what department of the Government this or that matter belongs. Since all children of school age would come under this Board for any point, one just communicates with the Secretary.

This Board would be of such moment to the people that at elections they would choose its members with the same zeal that a Mayor, Gov-

*The writer has purposely omitted all kinds of statistics because he felt that they would only detract from the point in question.

ernor, or any other high official would be chosen. This general plan is of just as much feasibility in a small rural district as in a large city.

As it is at present in many doubtful cases, children who are exceptional (perhaps to be sent to institutions and the parents objecting) the Children's Court is asked to enforce action because the child is a hindrance to the proper regime of the school. What is to be done? The parents in most cases take precedence over the Court, and the child is allowed to play on the street just as he wishes. Crime is bred and a poor citizen is developed. This era of eugenics demands that we prevent crime in preference to curing it.

A few instances may serve to illustrate the point. A boy is arrested for stealing a teacher's pocket-book. The case comes before the Children's Court Judge to whom this is a minor offense. No matter how riled the teacher may be, if the Judge suspends sentence on account of the boy's first offense, the boy might go back to the class-room. What kind of order and respect can the teacher in such an instance enforce from her scholars? The writer has seen a number of just such cases.

The infringement of one city department on another can well be illustrated by many cases most of us have known. For instance, the relationship of health and school departments; the health departments usually employ nurses or physicians to seek the physical defects or contagious diseases among the pupils. The school department (that is the teachers) finds a child does not get along well and is below the average in some branches. After the health department finds the defect, the school department must arrange its tuition accordingly—the chairs must be raised or lowered, the room made lighter, airier, cooler, etc., even then the health department often criticises the school department for its lack of courtesy, or because health comes before education, etc. The results are as we all know more rivalry, not of who can do the most for the child, but personal jealousy.

Now add to these two departments the third, the department of justice. The Children's Court may advise to the contrary of either of the two others and we have a melange. The Court may suggest one thing and the parents refuse, and in most countries the parents have supreme authority over their children so long as they do all in their power to educate and nourish them. The Court in very many cases are absolutely helpless. Thus often the health department and the educational department both apply to a court with limited power—add the independent institutions.

Of course the privately conducted asylums who collect funds from religious or other philanthropic organizations justly claim the right to take or refuse whom they wish. In a way all of the before-mentioned bodies are at their mercy. After months of energetic work in preparing

a case, and the Judge of a Court suggesting some custodial care, the asylum has a right to say "no."

When the various charities departments are invoked for their aid, they may decide the case is not a proper one for charity or suggest it is up to the Court to decide and not a city department. The parents won't accept a certain suggestion because their children are "too good" for this or that institution, or may be the parents happen to be too proud, too stubborn, or even ashamed of a disposition as advised. Thus one may continue almost to each branch of the children's questions and the intermingling of powers and forces gives a resultant which acts for such inferiority that the progress of civilization is markedly encumbranced.

A congress such as this should take steps to advise all cities, all villages of all countries to have a central Board which shall be a *quasi Supreme Court* for children and everything appertaining to them. As an idea it may be made up of elected members who like United States Senators change only a few members at each election, never leaving an entirely new body come into control. It is generally acknowledged that commissions are the ideal form of government for every department of a state or city. Among the finer details may be mentioned that these bodies could send their representatives to a county body who are a unit of a State or Provincial Department, which in turn is a branch of a National Department or Commission.

Briefly let us consider a few cases to actually illustrate these points. Two boys in a Brooklyn school had no respect for teacher or principal—on many occasions they had shown this. The teacher refused to have them in her class, and the principal put them in different class-rooms at various times. One day the principal found the larger of these two boys brutally assaulting the smaller. The principal had both boys arrested. On examination both boys were found to be feeble-minded and distantly related. The families were too poor to feed or dress them properly, yet, they were too well off to be objects of charity societies. When the Judge had to decide what was to be done with these two boys, although he knew all the facts of the case, he could only send them back to school.

It so happened in this particular case, the principal announced to the parents of the children that under no circumstances would she accept these children in her school again. The parents defied the principal and said she must, they would make her do it. And although the parents did not bring up this point in the court room, the principal was placed in such a position that the boys are really in no fear of her. They tell their friends and the resulting lack of discipline on account of two feeble-minded boys is beyond an outsider's realization.

With a Board as described, the case would have been considered from a different view point; all the Judge could note was two stupid, unruly boys who had a battle. Being their first offense and the charge after all not so serious in the Court's eyes, the prisoners, after a lecture, were ordered back to their class-room.

This pseudo Supreme Court would realize the true state of affairs from the teaching standpoint, even if the crime committed was not so serious, and the teacher would be better protected. Although this Judge was anxious to aid the teacher, he really did not know where to send the boys. Their crime was not so serious to send them to a House of Refuge or other prison. They did not play truant, and therefore could not be sent to a truant school. No charity institution would accept them because the parents claimed they supported them properly, moreover the boys also agreed to this. They were no orphans and could not be placed in an orphan asylum. For similar reasons since they were not blind, deaf or crippled, they could not be placed into such institutions, and after all the Judge acted about as any fair jurist would in like cases under the present regime.

We have a Federal Children's Bureau whose object is to act in an advisory capacity, and to gather statistics of information for any desired purpose; while this powerful *quasi Supreme Court* would have power in every land where it is in existence. It would not infringe on any present existing bodies, would be made up of certain units from the various sections of the land, and would be able to smooth out many entanglements that so often arise. Just the case of these two boys would come up before such a department. The parents would have to concede to the department's wishes, and the children could be placed as these authorities direct. Personal liberty would be somewhat lessened; but it is a rule that the more civilized a land, the more laws and restraint are enforced and the cutting off of freedom is the result.

In this particular case, what harm would come from taking improperly nourished children from ignorant parents and placing them where the best that is in their bodies and minds could develop? A method as explained before against the policies of most nations at present. A State often curbs personal liberty. Only the quantity of restraint is the question. Monogamy is thought by many persons to be a most cruel imposition of the law, yet, it is carried out by all civilization according to the maxim that is best for the public. Children who are feeble-minded, syphilitic, or tubercular, could thus by statute be segregated and their intermarriage in a way hindered, and often cures performed.

For example: A boy whose parents are comfortably situated has a tubercular hip. The writer has tried to influence the parents to aid this boy. Although he has discharging abscesses they will not help

him. They read there is no established cure for tuberculosis and they would not waste time, hope or money on any experiments. Food, amusements and clothes in this particular case are plentifully provided, but the poor boy is getting worse because no one tries to help him medically.

There is no way of enforcing a law to have a minor examined mentally if no offense has been committed and the parents object to such a procedure.

Even if various Legislatures passed individual local laws and the central governments have a composite Board to see that they are carried out, the problem would become much more complex than with the suggested plan. Courts are always overcrowded with cases and to add to these new ones would be an unreasonable hampering of justice. We need union of all forces. We need new stronger power. We all know that parents many times think they are conversant with their child's necessities but this Board would be in a better position to judge than any present Children's Court. The broader questions not only of law but of humanity could come up before them. Even if Judges try to use human endeavors opposing counsel may prevent much good work that could be carried out by arbitrary Board with extreme powers.

The Board of Health often takes upon itself in many of the larger cities, the powers to enforce quarantine. They surely are justified but a recent case in the City of New York may serve to illustrate the uselessness of this power when put to a test. A family of three children and a mother all had diphtheria and scarlet fever. Four weeks after the initial onset in the family one of the children still had some desquamating scales. They were warned by the Health Department official not to leave their apartment. They took no notice of the warning, and the Health Department took the child away to a hospital for contagious diseases. Legal measures were about to be instituted and for some unknown reason the child was released. The writer does not know whether the Health Department officials decided in order to place themselves at the mercy of the Court would be hazardous and it was simplifying matters to let the child go home. What an effect this must have on the friends and relatives of the boy's family.

It seems unnecessary to give statistics on this question. The enormous expenditures of money and the large proportion of feeble-minded persons who are not taken into custody are well known.

If the writer has made this one suggestion clear before you he feels that a good reform was attempted which some day must come.

In conclusion, this Board could be paid out of small assessments on each of the local city departments in any State who in turn donate *pro rata* to the State Departments and these to the National Commis-

sions. The burden would hardly be any greater to the tax payers but it does seem that more official work must result.

In this country at least an actual saving may be brought about by unifying so many different phases of childlife and preventing reduplication of work. Neither State Rights nor Local Governments are unjustifiedly infringed upon and interstate relations are obviously strengthened.

This after all affects the exceptional children in such a degree that the populace will see the problem as it really stands. The sooner this results, the quicker will we be able to ask plebeans to help enforce the laws of eugenics, and conversely these same plebeans will demand more knowledge of them.

LA INTELIGENCIA DE LOS ESCOLARES

Medida; Clasificación; Selección. Aplicaciones higiénicas y pedagógicas

ENSAYOS EXPERIMENTALES, Y CRÍTICOS, BREVE INFORMACIÓN
POR LOS DELEGADOS ARGENTINOS

ANTONIO VIDAL Y CARLOS ROBERTSON

Trabajo destinado á suministrar al IV Congreso de Higiene Escolar, una información breve y substancial acerca de indagaciones y estudios proseguidos desde muchos años por uno de los autores, el Dr. Antonio Vidal, y que no han sido hasta aquí hechos conocer sino muy parcialmente.

Trátase, desde luego, de ensayos experimentales y críticos sobre métodos y procedimientos los mas conocidos y autorizados, entre los propuestos para *la medida de la inteligencia*: Binet y Simon, Sancte de Sanctis, Decroly Degand.

Y, con ello trátase asimismo de ensayos propios, personales, emprendidos en el mismo sentido que los anteriores, pero convergentemente á diversos objetivos y poseyendo otra significacion.

En el curso de estos ensayos, hanse puesto á contribución en grado diverso, y en modo distinto tanto, que la conexión entre si, y con los asuntos en estudio, puede á primera vista no ser perceptible, hechos y sugestiones procedentes de Sergi, Ebbinghaus, Kraepelin, Mosso, Claparede, Griesbach, Joteyko, Schuyten, Thorndike, Muensterberg, Stanley Hall, Sully, C. W. Eliot, Rein, Scripture, W. T. Harris, Hanus, Thwing, Butler, Crane, Draper, etc., y se tiende á *determinaciones mas altas y complejas y de mayor alcance* (Por cierto descontando de antemano la relatividad de los resultados). Más altas, en cuanto las verificaciones y pruebas se refieren *no solo á escolares deficientes*, de escaso espíritu, sino á *niños psíquicamente normales* (ó en la zona de la normalidad), y aun á *supernormales*. Más complejas: en cuanto las indagaciones de laboratorio se continúan ó combinan con indagaciones de aula ó pedagógicas, y hasta con estimaciones de cierta índole, que pueden decirse *directivas*, encaminadas á la clasificación, y selección de aptitudes-De mayor alcance, en fin, dado que los estudios de este orden no solamente tienen en vista aplicaciones á la higiene del trabajo cerebral, sino á la economía y productividad de las energías mentales. Se entreve, para las pequeñas y las grandes colectividades escolares, el empleo conveniente, previsor, de las actividades en potencia y el consiguiente mejor

aprovechamiento de las capacidades personales. Problema de gobierno educacional, cuyas proyecciones las puede percibir cualquiera.

He aquí, entretanto, netamente indicados, los objetivos y las direcciones principales del trabajo. Al propio tiempo, á guía de conclusiones, anticipáanse algunos juicios que van á ser ampliamente fundados en una publicación próxima.

1. *Revisión experimental y crítica de los métodos* (Binet y Simon, Sancte de Sanctis, Decroly, Degand, etc.), para medir la inteligencia infantil. Por la fijación y recomposición de los buenos elementos que contienen; por la corección de sus imperfecciones; por la adición de elementos nuevos que hacen falta; y, en fin, por la acertada recomposición de estas diversas partes en un conjunto sometido á la prueba experimental, se puede hoy llegar, conviene tentarlo á la constitución de un nuevo método. Instrumento de investigación y de trabajo, este que realmente hace mucha falta hoy.

2. *Determinaciones relativas á la inteligencia normal ó media y aun á la superior, y á la excepcional (supernormal)*. Estas determinaciones, en efecto, están del todo, ó casi, fuera del campo abarcado por aquellos métodos. Se impone realizarlas, coordinarlas, metodizarlas.

3. *Combinación de medios estrictamente experimentales de laboratorio*, con medios de indole más bien pedagógica, al alcance del institutor, procedimientos de instrucción, experiencia del aula. En favor de esta alianza hanse ya ejercitado esfuerzo apreciables con buenos resultados, en Alemania, Francia, Estados Unidos, Bélgica, Argentina, etc. Sería el momento de afirmarla, dándole sólida base de observación científica, psicológica.

4. *Aplicaciones á la Higiene*. El trabajo sano y eficiente, no puede sino derivar de un proceso de "apropiación," de "acomodación" de estos factores: tiempo de actividad, cantidad é intensidad del esfuerzo, modos y medios, á los factores de caracter personal. Y estos resúmenese en un *problema de cuantificación y calificación de las aptitudes organico-mentales*.

5. *Clasificación; adaptación individual; direcciones profesionales*. Sobre la base de la calificación y cuantificación, la clasificación de alumnos, por grados ó clases; categoría, tipos, su conveniente distribución, y, a la adecuada adaptación individual de los procedimientos pedagógicos que estén indicados. Sobre la misma base, diferenciación de las aptitudes individuales en orden á la finalidad profesional.

6. *Experimentos colectivos* de cierto orden, conducentes á conocer y valuar las inteligencias, á escojerlas, á seleccionarlás, á propiciar su desenvolvimiento (muy poco se lleva realizado hasta aquí en este rumbo).

7. *Aplicaciones en campo mas amplio, en el propio gobierno escolar:* Selección y protección deliberadas, regulares, metódica, de las inteligencias cuantificadas; prácticas selectivas, enderezadas á propiciar la formación de las capacidades, y con ello á que rindan su máxima eficiencia, las energías mentales de una colectividad.

THE INTELLIGENCE OF SCHOOL CHILDREN

Measures; Classification; Selection; Hygienic and Pedagogic Applications

BRIEF STATEMENT BY THE ARGENTINE DELEGATES

A. VIDAL AND C. ROBERTSON

The object of this paper is to present to the Fourth International Congress on School Hygiene a brief statement of the investigations made during years, by one of the authors, Dr. A. Vidal, only partly published thus far. Covering experiments of several methods, and authoritative proceedings, proposed for the measurement of the intelligence of children: among others, Binet and Simon, Sancto de Sanctis, Decroly Degand, etc. Some personal experiments, similar to those of the authorities mentioned above, but perhaps of different significance.

During these experiments others made by Sergi-Ebbinghaus, Ernepelein, Mosso, Claparede, Criesbach, Joteyko, Schuyten, Thorndike, Muensterberg, Stanley Hall, Sully, C. W. Eliot, Rein, Scrituro, W. F. Harris, Hanus, Thwing, Butler, Crane, Draper and others, have been taken into consideration. The superior experiments do not only refer to defective or deficient school children, but to children physically normal, and some of them to super-normal children.

Referring to the laboratory investigations and experiments they are combined with the pedagogic investigations and experiments, some of which can be called directive, with the tendency to classify and select the various mental capacities. These experiments do not only apply to the mental hygiene, but also to the economy and production of the mental energies, the development, and the utility or advantages of the various personal capacities.

It is a problem of the educational government, the importance of which can be comprehended by all. As a guide of conclusions, we forecast a few opinions, details will be referred to in some future work.

1. To revise the experiments, critics and methods of Binet and Simon, Sancto de Sanctis, Decroly Degand and others, for the measurement of the intelligence, and infantile abilities. To combine the good elements therein contained, to improve or correct their faults if any, to add lacking features, and all of this would form a new method to be tested.

2. Relative determinations of the normal, the average, the superior, and even of the super-normal intelligence. These determinations have

not as yet been effected, nor dealt with by the first methods referred to above. It will be necessary to materialize those new experiments, co-ordinate and methodize them.

3. Combination of elements, strictly experimental laboratory with elements of pedagogic character, as understood by teachers, educational procedures; the experience of the lecture halls. This combination of features have given the best of results in Germany, France, United States, Belgium, and in the Argentine Republic.

4. As applied to hygiene. The efficient work is obtained through a process of appropriation of the following factors: Time of the activities. The amount and intensity of the efforts. Methods and elements. Factors of personal character; summary a problem of quantitative and qualitative analysis of the mental organic faculties.

5. Classification; individual adaptation; professional directions. On the qualitative and quantitative basis, the classification of the school children by classes, and by types, convenient distribution of adequate and individual adaptation of the pedagogic procedures, which are indicated. On the same basis, the dissimilarity of the individual abilities of the professional staff.

6. A certain class of collective experiments, conducive to the knowledge, and to rate the intelligence, to select the mental abilities, and to propitiate their development (little has been done so far in this direction.)

7. Application in a larger field within the school government. The regular and methodized selection, and protection of the qualitative intelligence, in order to propitiate the formation of the various abilities, obtaining the maximum efficiency, and best mental energies of the masses.

THE PARTICULAR NEED OF MENTAL CLASSIFICATION IN SPECIAL SCHOOLS

BY

ELIZABETH A. IRWIN

I would like to present a brief report on a Poverty school in New York City, of which I have had an opportunity to make a study during the six months January to June, 1913, from the point of view of mental defect among the children.

This school is one of a group of free schools supplementing the work of the Public Schools. It has for its purpose the care of the children "too poor to attend the Public Schools." I will not dispute the soundness of that statement here, but I hope everyone will mentally challenge the imputation that any children are too poor for the Public School, anywhere.

This school consists entirely of American-born children, most of them of American-born parents. They live in a neighborhood so situated in relation to the rest of the city and so isolated by the lack of transportation facilities that they seem to dwell in a city by themselves. The people here go on being poor, drunk, out of work, overworked, intermarried and feeble-minded and the rest of New York does not know it. The philanthropist and sociologist concerns himself more usually with the picturesque immigrant, the thronging East Side, or Little Italy full of charm and color. This neighborhood is dull and drab and unattractive. It is not because of its charm or dramatic effect that I call your attention to this little school at the outer edge of this Middle West Side neighborhood. It is rather because it seems to me it must be a fair type of Poverty school all over the country of the kind that is the last of all studied and improved.

In this school and it is true in all the free supplementary schools in New York City, no provision is made for the recognition and separation into separate classes of the mentally backward and feeble-minded children.

The classification which I have made according to the Binet Scale of the 201 children in this school from the beginning of the second through the fourth years shows the following percentage of mentally normal, backward and defective children.

144	or 71.64%	Normal.
25	or 12.44%	Backward from two to three years.
32	or 15.92%	Feeble-minded more than three years backward.
<hr/>		
201	100.00%	Total number tested.

This is to say that 57 of these 201 children should for their own sakes be having special instruction and should be prevented from clogging the progress of the normally equipped child. This 15.92% is strikingly in excess of the estimated 2% which Dr. Goddard has published as the probable number of feeble-minded children in the New York Public Schools.

From the point of view of the education of the mentally defective and backward child, I need not make a plea for separate class rooms, as that is now an established necessity and is being increasingly provided for in schools all over this and other countries.

The point which I do wish to make is, that wherever there are special schools for the children of the poor there must be an especial effort at mental classification and separation of backward and feeble-minded children. Otherwise the school is no better than the neighborhood in that it continues during school hours the unfortunate condition of surrounding the children with handicapped individuals and making them familiar with failure as an everyday affair, condoned or unsuccessfully combatted by the teachers, in a large per cent. of their companions. From this point of view primarily the failure to remove the mentally defective from the school room with normal children is bad.

A study made this winter in the New York Public School for Incurables by Mr. Alfred E. Rejall, a student in the Department of Psychology of Columbia University, shows a similar percentage here of backward and feeble-minded children. This suggests that there is also an especial need for mental classification in schools for truants and delinquents.

The two reasons, then, for this need of mental classification in special schools more than in ordinary schools are:

1st. The proportion of mentally defective children is apt to be large in a group formed on the basis that their parents have proved themselves incapable "of competing on equal terms with their normal fellows" or "of managing themselves and their affairs with ordinary prudence."—these definitions of feeble-mindedness having been accepted by the British Royal Commission on the Care and Control of the Feeble-Minded.

2nd. The normal children in such special schools have already more than their share of handicap, in their home and neighborhood conditions.

I would therefore submit for consideration to those interested in special schools the proposition that there is a particular need for mental classification in special schools dealing with the problems of poverty, truancy and delinquency.

A NOTE ON THE PSYCHIC FACTOR IN STAMMERING

BY

H. CRICHTON MILLER

The aspect of this subject that I desire to put before you in this paper is, as far as I am concerned, original, and was first embodied in a paper I read on the subject before the conference on Voice and Speech Training held in London in January, 1912.

Since then I find that my views have largely been anticipated by Mr. C. A. Hugh Jones in his volume entitled "The Nature of Stammering and Its Cure," published in 1908. This excellent volume I would heartily commend to the attention of all serious students of the subject.

Speech is the usual method whereby the thoughts of one individual are conveyed to another. Its chief characteristic and the one that gives it the greatest value is that it is subconscious or automatic. Robbed of this characteristic it is no longer silvern but preëminently leaden. It is like the walk of the patient with disseminated Sclerosis who has to make a series of conscious volitional efforts to effect each step. It is like the violin playing of the beginner who has to think out each movement of bow-hand and string-hand. It fails, in fact, to perform its chief function, namely to convey thought, because it monopolises thought in its own production, just like an ill-designed machine which, instead of transforming energy, absorbs it in frictional loss and transmits hardly any. There are countless systems for curing stammerers; the literature of the subject is replete with laborious observations; numerous alphabets have been devised to assist the victim of stammering, and yet, when all has been said and done, we are bound to admit that most stammerers, no matter how perfect their cure, relapse either immediately or within a very short time. For my own part I hardly ever see a stammerer who has not had from two to six courses of treatment on different systems. Surely this ought to give us a key to the solution of our problem. If we admit that it is comparatively easy to make the stammerer articulate normally, and if we also admit that his normal utterance tends to give way as soon as he returns to the business of life, then we must admit that the failure of cures for stammering lies in their incapacity to allow the patient to think of what he is saying; in other words the success of the cure depends on the patient thinking of *how* he is speaking. It is the same with every automatic function, from typewriting to winding one's watch, from lacing one's boots to playing a sonata. The Mechanisms are established in order that

our higher intellectual centres may be free for thought activity. Therefore every automatic act which is performed volitionally involves an encroachment on the intellectual life. Furthermore I submit that every well established automatic act is performed indifferently when we attend to it. This may seem a big claim but I am prepared to substantiate it. Take the commonest automatic act of life—breathing. No amount of deep breathing exercises, no degree of proficiency in breath-control will produce the absolutely rhythmical breathing of the normal man who is not thinking of his breathing and whose body and mind are free from disturbing influences. Again consider the piano-player. His power of perfect expression and interpretation depends on his ability to relegate the mechanical part of his performance—the mere technique—entirely to the subconscious or lower centres.

In short, what we have to do when we set out to cure a stammerer is to teach him to speak fluently and yet automatically and the defect which generally, if not always, causes the stammer is the patient's habit of consciously trying to speak volitionally. We ought to aim at correcting the tendency to voluntary interference with the automatic act rather than to encourage the patient to attend more to the speech production. Hugh Jones says, "The true cause of stammering is intervention of consciousness in what should be a subconscious and sensory process."

But we must get behind this fact. How it is that the subconscious act of speech comes to be consciously interfered with? Well, in the main the cause can always be classed under a somewhat vague expression—psychic tension. By this I mean emotional strain, excitement, exaggerated idea-pressure, and so on. Now in all of us, but particularly the neuropath, this psychic tension tends to produce an instability of the attentive process with a greater or less degree of introspection and self-consciousness (I use this term in the popular sense). This is the basic condition that we have to treat—the tendency to self-consciousness under emotional strain. And here let me point out that a stammer is part of a vicious circle, for the fear of stammering produces the emotional condition which presents effective control of the attention and thus determines the continuance of the stammer.

Modern applied psychology offers us two methods of dealing with the condition. The older is suggestion, the more modern is psycho-analysis. I am aware that the latter has, during the last few years, largely supplanted the former—in Europe, at any rate—but I confess to being sceptical about Freud's method. It is thorough, it is laborious, it cures permanently or not at all, but I question whether it will ever be condensed into a practical working method for the ordinary patient. A course may take anything from three months to a year and the work

cannot be carried out by any half-trained assistant, it must be a very highly skilled and highly trained operator. In hypnotic suggestion, on the other hand, we have a remedy the results of which may, on the average, be less permanent than those of psycho-analysis but which last much longer than those of the ordinary educative methods. But the great practical point about treatment by suggestion is its rapidity. In six to thirty sittings an ordinary case of stammering may be cured with a very reasonable prospect of permanence. I am sorry that I have no statistics to offer, but if I had they would not be very encouraging and that for the simple reason that most of my cases are adults who have undergone—and this is the important point—many courses of treatment on diametrically opposite lines. From what I have already said it will be obvious that this makes all the difference to the prospects of cure. If a patient has for months and months been schooled to speak consciously most of one's time is taken up in correcting the effects of past training. On the other hand a child who is under sixteen and has never been through a so-called cure is usually cured permanently by suggestion in a reasonable number of sittings.

Now let us enquire for a moment into the rationale of these different methods of cure.

An automatic act arises from an established co-ordination. In the brain certain nerve fibres and cells develop, from frequent use, what is termed a lowered synaptic resistance, so that nerve energy flows easily along these paths. In the stammerer the resistance of certain synapses in the speech-controlling mechanism rises when it should remain low and in consequence the current is blocked and the utterance inhibited. Now all ordinary cures aim at overcoming this resistance by voluntary effort, directing the patient in one way or another to force a strong volitional current through the co-ordinating mechanism. In treatment by suggestion on the other hand, our aim is to produce a lowering of the psychic tension so that abnormal and undesirable resistances may not occur. We aim at producing a mental attitude of self-confidence so that the fear of stammering does not raise the tension and hence resistances remain normal.

In psycho-analytical treatment, again, it is assumed that a definite and specific complex (or group of emotional ideas) is being repressed and thus raising the psychic tension, and the entire treatment is directed towards the discovery and laying bare of this complex. When this is the case the psycho-analytic method is unquestionably the correct one to adopt but I cannot convince myself that we need necessarily assume the presence in every case of stammer of a repressed complex, and as I have already said, treatment by suggestion is usually much more rapid in its effects.

To sum up, then, I submit that:

1. Stammering is fundamentally a psychic complaint, and not a physical one.
2. The speech function can only be carried out normally when it is automatic.
3. Stammering consists in an attentive interference with this automatic act.
4. All treatment which directs the patient's attention to the speech mechanism is likely to defeat its own end.
5. Hypnotic suggestion and psycho-analysis are the two principal methods of reducing psychic tension and so eliminating attentive instability.

SESSION SIXTEEN

Room A.

Thursday, August 28th, 9:00 A.M.

PLAY AND ATHLETICS

JOSEPH LEE, LL.B., *Chairman*

FREDERICK A. VOGT, Buffalo, N. Y., *Vice-Chairman*

Program of Session Sixteen

JOSEPH LEE, M.A., LL.B., President of Playground and Recreation Association of America, Boston, Mass. "The Spiritual Sources of Health."

ERNST HERMANN, Superintendent of Playgrounds, Newton, Mass. "The Hygienic Pedagogical Importance of Play During School."

JOSEPH H. BARACH, M.D., Consultant in Special Diagnosis, Carnegie Institute of Technology, Pittsburgh, Pa. "Against Over-Athleticism."

J. W. KIME, M.D., Superintendent of Boulder Lodge Sanatorium for Tuberculosis, Ft. Dodge, Iowa. "High School and College Athletics as Viewed from the Medical Standpoint."

EDGAR L. RAUB, Sub-Master John A. Andrew School, Boston, Mass. "Athletics for Elementary School Boys."

GEORGE E. JOHNSON, M.A., Superintendent of Playgrounds, Pittsburgh, Pa. "Play versus Work in Education."

CLARA L. VAN SLYCK, Department of Recreation, Russell Sage Foundation, New York. "The Rural School as a Recreation Center."

LUTHER H. GULICK, M.D., President Camp Fire Girls, New York. "The Social Function of Play."

Paper Presented in Absentia in Session Sixteen

(Read by Title)

CHARLES F. STOKES, Surgeon-General, Chief of Bureau of Medicine and Surgery, Washington, D. C. "The Effect of Athletics upon Health."

THE SPIRITUAL SOURCES OF HEALTH

BY

JOSEPH LEE

School hygiene is important largely as promoting the children's mental development. What is not so generally understood is that mental development is perhaps the greatest source of children's health. We should establish here what I shall venture to call a virtuous circle: the more healthy the children are the better they will do in their studies, and the better they do in their studies the healthier they will be.

It is a grave mistake to look at school hygiene wholly or chiefly from the physical side. Man is first and in the main an intelligent being. His life is not chiefly in his muscles but in his mind. To promote his life you must promote *him*—foster the growth and vigorous projection of that which he most truly is. Other creatures have made good their position on this planet through various sorts of excellence—as by hoofs or claws or wings and skill in using them. Man has succeeded, in spite of physical inferiority to many of his competitors, through superior intelligence; it is that little head of his that has pulled him through; and the chief of his life is in that faculty to which he owes it that he is alive.

Practically speaking, man is a soul of which the body is an emanation, not a body of which the soul is a by-product. I am speaking not metaphysics or theology but stating what I believe to be in simple truth the first law of sound hygiene. I find in practice that my children's temper, weight, and general appearance improve when they come back to school in the fall after the long vacation, and I seem to remember a mightier hunger after a three hours' examination than ever resulted from a ball game. The most important thing to make children well is to provide them with the fullest mental life, to give them such occasion to wreak their spiritual instincts as shall bring out the last ounce of power that is in them. The spiritual force thus awakened will build up the body that it requires to do its business.

It is true that the mental life of a child is largely a motor life: he lives and thinks largely in terms of muscular action. But the use of his muscles is important, not chiefly because it serves certain physiological ends but because it is an expression of the soul. We make too much a fetish of air and exercise. We must have these but they are not, even in the promotion of physical health, the only things. The mind life is even more important. Better a stuffy schoolroom with zealous work than *fresh air and mental flabbiness*.

What can we school hygienists do to promote the fuller mental life of school children? I do not wish to open the whole question of education. We are not educational experts, and our views could not be taken as authoritative. There are nevertheless certain kinds of education that tend to promote mental health more than some others, and we can properly bring these to the serious attention of the experts. In general I think we have a right to insist that our children shall to be made larger and not smaller men and women by their schooling. It is not enough that the training they are subjected to should do them no great harm; on the contrary we shall not be contented with anything short of the maximum bodily and spiritual efficiency at graduation.

Must Call Upon the Great Constituent Instincts. As a means to this end our schools must call forth the full life and power of the child as it exists in him. They must call into play the great human instincts which are in truth his constituent elements, of which body and mind are the instruments. We must ask that education be not all receptive but in the main a putting forth of power; for it is not what a child takes in but what he puts out that is added to him. Our schools must call out the creative instinct, the impulse to shape material in obedience to imagination, the instinct that causes the child to make mud pies and palaces, and that later finds satisfaction in composition of all kinds, whether in words or tones or colors—even in the building of hypotheses—the instinct that is the germ of all creative work, without the exercise of which the creative soul of man cannot itself get born. We must through dancing, music, literature, give scope to the great rhythmic instinct that sets the small child dancing, marching, chanting—that during the earlier period of growth sets the whole world to music—the instinct which, married to the creative faculty, is parent of all the arts, and in the satisfaction of which, more than in their so-called serious pursuits, men often find their life.

We must give wider scope to the great instinct of curiosity with its lessons in discovery, experiment, exploration. We must develop the nurturing instinct which so largely constitutes the spiritual life of girls—and of boys, too, to a greater extent than is generally realized—by means of school gardens and by giving the elder children responsibility in relation to the younger ones. We must continue to use the great instinct of competition, which is so large an element in the famous Jesuit system of education. Some educators seem to think there is something vulgar about competition: if so, mankind must be hopelessly vulgarized from the beginning, in all its manifestations from war to minstrelsy, in all the arts and professions, from theology to baseball. We must use to the full the great belonging instinct, which has made the gang and has

also made all nations and all associations of men, from Adam's domestic circle down to the latest college fraternity.

Education, in short, must bring out in each child the common life of humanity of which he is an example. Except as he is maker, competitor, nurturer, explorer, citizen, man does not exist; and you cannot promote his existence, the life even of his body, if you leave out these instincts which body and mind are built to serve. The life of the tree must be in the leaf if it is to live at all. School hygienists must stand for school playgrounds, for the kindergarten, and for every other form of education that will bring out the universal human powers in the child.

Reach the Child. Second, the child must be so far recognized as an individual that the education shall actually reach him, not merely be spread about in a way that may get to a third or two-thirds of the members of the class and leave the rest untouched. As there is nothing that so tends to health as the happy encounter and overcoming of intellectual obstacles—the conquest of intellectual worlds and their assimilation by the understanding mind—so there is nothing so obstructive to a child's life and health as being constantly mystified, plied with what seem Chinese puzzles that cannot be solved, subjected to a constant outpouring of words which others seem to understand but which are all gibberish to him. Nothing is so depressing, morally and physically, as being constantly misunderstood. I do not mean that whims should be indulged; such treatment involves not understanding but misunderstanding. What I mean is that the teacher should be able to see what the child is really thinking about, what his actual difficulties are; above all, what are his real powers; that she should be able to tap the reservoirs of unseen strength which are often themselves the cause of his apparent weakness, of his being so "difficult," as we say when our square peg refuses to go into the triangular hole that we have made for it.

A Good Teacher the Best Prescription. Of course this business of reaching the vital spot like every other educational problem, is a question of the teacher. A good teacher is the best prescription for the growing child, from the hygienic as well as from the intellectual point of view. We must encourage school committees to select teachers for ability to teach rather than for residential or political excellence. Even a domicile in Boston does not of itself insure pedagogical superiority.

Smaller Classes Essential. But that a teacher may be good, and her goodness be of value to her pupils she must not be spread out too thin. The life must not be taken out of her, and good professional work be made impossible, by her being given too large a class. We must get the classes made smaller, especially in our elementary schools. No teacher

can really know 40 or 50 children and properly attend to them. Some fifteen college preparatory schools in my own neighborhood, for which I have the figures, have an average number of pupils per teacher of about 13, and the size of their classes averages about 22. In the public elementary schools, where the need of individual attention, especially in the lower grades, is much greater, the size of classes is usually about 40 or even more—sometimes 50 or over—and the number of pupils to the teacher is not much less. When we learn to take the problem of our children's health seriously, we shall halve the size of classes in our public schools. By so doing we shall add about 80% to the cost, but we shall find that the children's life and development is worth it. What is it we are saving our money for? Is it that we may depart in an odor of gasoline, leaving a scrap heap of worn-out autos as a mausoleum? Or shall our monument be in a generation of healthy children?

Sort the Material. Another immediately practical measure—which, among other advantages, will have the same effect as greatly reducing the size of classes, and which will cost comparatively little, is to carry further than we have yet done anywhere the principle of differentiation. We must make full, separate, provision for all the deaf, the blind, for those who, though not blind, cannot see to read a book, for the dumb who are not deaf, for stammerers, for those retarded by sickness or other temporary cause, for the defective—both institutional cases and those who should be in special classes or in special schools—for the tubercular and, so far as we can, for the delicate or pre-tubercular, for truants, for non-English-speaking, and for the children who can go decidedly faster than the others. This last classification is important. Nothing is more demoralizing than the habit of working at half pressure. Our ordinary classes are for the brighter children a spiritual hobble skirt, spoiling their natural gait, perhaps for life, besides wasting one or more of their most precious years. Conversely the slow or defective child in the normal moving class is like a man who has caught the rear rail of a car—I believe curriculum means a little car—that is too fast for him. At first it hurries him beyond his normal gait, perhaps beneficially; but there comes a time when he misses his step and is merely dragged, to the disadvantage of his locomotory apparatus.

We shall probably learn to have, after the thirteenth year, classes for the motor child—technically known hitherto as the bad boy because he wants to do things rather than hear about them. And we shall recognize Crampton's idea of physiological age; and can do so at once by simply separating the mature children from the immature within the same grade and in the same school building. We shall abolish the rag bag known as the ungraded class—now used as a sort of discard into which

those children that the other teachers do not want are sent, more to get rid of them than with the idea of teaching them anything—dissolving it into its component elements among the classes above enumerated.

It will be objected, perhaps, to some of the classification I have suggested that children should not be treated as peculiar—that peculiarity, while actually existing, should be ignored—that children, peculiar children especially, should be made to keep stép, toe the mark, behave like other people, learn to get along with the normal child. The idea is entirely sound; but if it is to be carried out the differentiation must be made, not thwarted. For it is precisely among other blind children, and only there, that the blind child can be treated as normal. You cannot toe the mark if you haven't any toe. You cannot be taught sight reading if you cannot see. You must be treated as peculiar so long as, being blind or toeless, you are among children who have eyes and toes. It is when all the blind are brought together in one class and one school that their peculiarity disappears and that all can be treated not for their defect but for the normal human nature that is in them. The same is true of all other peculiarities that materially affect school work.

But more important even than the advantage to the abnormal child of being in a class where he can get a normal education is the advantage to the rest of not having a large fraction of the teacher's time taken up by a few children in each class. Proper differentiation will have the same practical effect as reducing the size of classes to a very considerable extent, and it is largely upon that ground that we should urge this measure.

To make full differentiation in our schools of the normal from the abnormal child we need hardly wait at all; for what is needed is not an increase in the teaching force but merely a right distribution of it. To some extent, it is true, expert teachers are required, and we must wait until a sufficient number have been trained; but, to a great extent also, good grade teachers, properly selected and given leave of absence for a short course, can do the work required.

Afternoon Out. I believe that pupils in the lowest grade, probably in the last three grades, should have the afternoon outdoors or in the kindergarten room, not wholly because of the benefits of the play and fresh air but chiefly to avoid the demoralization of half-hearted work. Half-heartedness is a serious disease, worse almost than half-lungedness. Our schools, of all places in the world, should not promote it. And a chief benefit of the afternoon out is that a few pupils may each afternoon be kept in and their real problems and difficulties discovered.

Summer Education. Another measure of practical importance to the child's intellectual life and health is the provision of summer schools.

Such schools should be so far as possible out of town—some of them in camps, especially the high schools. They should be voluntary, at least for the present; because some children now get a better education at the mountains, in the woods or at the seashore than our schools can yet hope to provide for them. But for those who have no such special advantages the schools should be open all the year round. We do not stop watering our plants in summer; and a child has as much right as a plant to continuous growth. If it be objected that our schools do not supply the sort of provender on which children do actually grow, they must be an evil in winter as well as in summer and should be closed altogether. The proper course, however, is to make them truly educational and keep them open—varying the teaching to meet the special opportunities of the time of year.

Summer schools would be especially useful in the case of pupils who would otherwise have to repeat a grade—a most deadly and discouraging experience.

Home a Spiritual Means of Health. When we have learned that a child's life is in his spiritual relations, we shall cease to look upon the home simply as a place to eat and sleep, and to think we have solved the problem of home hygiene when we have got the windows open and the diet properly arranged. We shall learn to respect the social worker, with his expert knowledge of what really constitutes a home and of the methods by which its vitality can be injured or enhanced. We shall, for instance, learn not to say that the one and only treatment for a hungry child is to feed him. We shall recognize that those who give their lives to a study of the subject are as fully aware of the surface phenomena as we can possibly be, and shall be content to humbly learn of them that if by feeding school children we injure the home we shall thereby wound the child himself in a vital place and shall by our crude remedy inflict a greater injury than our best skill will ever be able to repair.

School feeding should be, in my opinion, for sick children only, including the delicate or pre-tubercular, and it should be for these only as they pay for it. For children who cannot pay, the necessary assistance should be supplied by agencies expert in the diseases that lead to poverty, unconnected with the school.

Nurse and Social Worker. From the predominately spiritual value of the home it results that the chief service of the school nurse is social service. One of the problems which this Association might well set itself to work out is the relation of the home and school visitor, the school nurse, and the truant officer. For my part, I believe that, as the outpatient work of the school is primarily social work, a social worker—whether or not combined in the same individual with nurse or truant

officer—should be at the head of it, and that the specialized nurse or truant officer should be called in according as court work or court plaster is prescribed.

Mixing Grades Injures Health. I have spoken of positive measures that we can advocate. There are also things to be avoided. One place in which I suspect that we have made mistakes is in the bringing together of delicate and pre-tubercular children with too little regard for their school standing, mixing in one place children of more different grades than one teacher can properly look after. Whether in a given case a child gains more by fresh air than he loses by having his intellectual development interrupted, and being thrown out of step with his natural companions in such a way that he may never get in again, is of course a question of fact in every case. But we must at least be careful to assure ourselves, and to give full consideration to the intellectual side in so doing, that we are not injuring the child more than we are helping him by this sort of treatment. My own opinion is that in most cases classes for delicate children should contain not more than two or at the most three grades.

School Hygiene is Race Hygiene. In speaking thus at length of the predominant importance of the spiritual and intellectual forces in the promotion and conservation of the child's health, I do not wish to be understood as placing a low estimate on school hygiene in the narrower and more customary sense. School hygiene is the effective form of race hygiene. To improve the race by other means than selection—which, indeed, is the most important—you must draw a line across somewhere and allow no curable defect to pass. Obviously the school is the only place where such a line can be drawn. It is the only place where everyone must pass. And it comes at an age when the maximum in the way of remedy can be accomplished. We must not be contented in this matter until no child gets by without the best physical outfit that we know how to give.

What are we waiting for that we do not do this now? People say "go slow" about such things; but why should we go slower than we have to? Disease and disability do not intermit while we are waiting. Inaction on our part is in effect a decision against thousands of children.

THE HYGIENIC AND PEDAGOGICAL IMPORTANCE OF PLAY DURING SCHOOL

BY

ERNST HERMANN

From whatever point of view we study the value of play as a part of every child's school education we will find that it is of such great importance, both pedagogically and hygienically, that we cannot any longer look upon it only as a valuable substitute for the spanking rod or a kindness and special concession on the part of the teacher who finds herself at the end of her powers for keeping up interest and deportment. Nor do we meet the needs of our High School scholars by a tolerance of athletics as a kind of moral enema for congested scholarly ambitions.

The nearest approach to a real understanding of the pedagogical value of play we find in Froebel's methods. But unfortunately his kindergarten system is very badly applied to present day needs of the 20th century child and the present physical and mental make up of children. As Froebel's methods are being taught to-day in the school rooms they are used about two years too early. The Montessori method is pedagogically as well as hygienically much nearer the actual needs of the average American city child of 3, 4 and 5 years of age. But both these methods will not meet the physiological needs of the children unless more outdoor *free play with proper equipment* is added.

Our one morning and one afternoon recess and our artificial system of school room gymnastics, relief drills, breathing movements, fancy calisthenics, corridor promenading, change from so-called purely intellectual to semi-intellectual or manual training lessons are absolutely insufficient for the daily physiological needs of children. Two or three physical training lessons a week are sufficient for the development of special skill and the acquisition of knowledge of good poise, forms of exercises, and for training in military discipline and for the training of perfect and instant reactions. Such lessons should be classed with all other pedagogical means and must be subject to the same recreational variations.

But all these things do not insure the best possible functioning of the child's whole physical system, and without perfect functioning of all the vital parts of his mechanism good and really efficient mental processes are impossible. If forced pedagogical means are now employed for securing attention and deportment the child's powers of *concentration* and *attention*, *discrimination* and *logic*, *interest* and *enthusiasm*,

are systematically weakened, and, in a few years deteriorate beyond recovery. The prolonged forcing of mental processes is always in itself a serious offense in education. With children not in perfect condition, due to slower circulation of blood and lymph and respiration and with increased presence of waste products of metabolism, due to the growing process *plus* sedentary work, such forcing means a constant nerve waste which must finally result in breakdown.

It is hardly necessary for me to point out to this audience our rapidly increasing knowledge of the real function of the lymphatic system, nor do I need to emphasize here the fact that the lymphatic system does depend upon the muscular system for its proper functioning even more than the blood system.

From birth on the child unconsciously shows us the way nature proceeds. It is alternately active and at rest, apparently busy at all times. Yet there is alternation of activity and repose. Always it grows in spurts. A period of growth is followed by a period of settling down. Nature in all its processes proceeds rhythmically. To force (not necessarily by physical means) a young child of 4 years to a continuous mile-walk may very seriously affect his usuro-muscular system, since the powers of endurance mature very late in life. Prolonged severe exertion will result in a stunted growth of the physical body. *How much more dangerous are our present day school methods of long continued and forced attention under lowered physiological efficiency?*

My first contention therefore is this:

The periods of forced attention under sedentary indoor conditions must be shortened.

With children of 4 and 5 years, 15-minute periods of directed and spontaneous activities should alternate.

Six, seven and eight year old children should have half hour periods. The periods should alternate indoors and outdoors.

From there on throughout the rest of the grammar grades the child should have at least twenty minutes in every sixty minutes devoted to wholesome outdoor physical recreation.

Germany made a step in the right direction when five years ago they ordered a fifteen minute outdoor recess in every sixty minutes of school, in all its public schools, instead of the up to that time optional 10 or 15 minute recess in every hour. They proved the value of 5 extra minutes in the physiological economy of growing children.

I do not care how much we alter the study-plan in our primary and grammar schools in order to lessen physiological strain. My twenty years of experience as director of physical training has shown me the utter inadequacy of such relief measures as shifting of subjects and breathing movements.

Nothing can possibly be as beneficial as an outdoor period of 15 to 20 minutes every hour with the opportunity for actual relaxation, perfect change of environment, and its vigorous and spontaneous physical actions and the mental tonic which comes from wholesome children's play.

I am first and last a firm believer in the efficacy of systematic physical training throughout all our grades, and would make it compulsory in high schools and colleges. But in the schools I would treat this subject like any other special pedagogical subject. But to insure daily and hourly physiological efficiency in the schools I have found nothing as effective as *outdoor play recesses every hour*.

Our high school plan of one seven hour session daily, with 5 minutes between periods and one-half hour recess for lunch and relaxation are to my mind the greatest and most deplorable folly in American school hygiene. In these schools we deal mainly with adolescence or post adolescence when heart and lungs have their most rapid growth. If we want to make real progress in the fight against consumption and against the increasing nervous disorders the question of high school hours should receive our very serious consideration. I do not know of any more important phase except may be that of the adolescent factory and shop worker. *Unrelieved sedentary work during adolescence means undersized lungs and undeveloped hearts*. Beside this question the matter of school luncheons falls into insignificance, especially since the two session plan would solve the matter of luncheons by giving the home a chance to provide breakfast and luncheons at reasonable hours.

Pedagogical Value of Play. The hygienic importance of play as a part of our school education is, however, overshadowed by its great and ever increasing pedagogical value.

We can only realize this if we study the environment and the conditions of the children below seven years. Everyone here will admit that the first seven to nine years of a child's life are of the utmost importance as brain-making years. The physical growth of the brain is practically completed at 9 years. The development and the modification of the motor areas of the brain during these years determine to a very large extent the future mental capacity and characteristics of the child. If the motor life of the child is a limited one during the first years of its existence his capacity for future mental training will be limited. To quote Dr. G. Stanley Hall:

"The motor areas are closely related and largely identical with the psychic, and muscle culture develops brain centers as nothing else yet demonstrable does. Muscles are the vehicles of habituation, imitation, obedience, and of character and of manners and customs. For the young motor education is cardinal and has now come into due recognition. All education is incomplete without a motor side."

Herein lies the whole foundation of our education. But this foundation is practically laid *before the children come to school*. I have observed for twenty years how our pedagogues are putting into our schools one new thing after another in an effort to make our school education more effective. All kinds of physical and manual training have been added and still we hear that our children are not well versed in the three R's, and that our schools are overloaded with fads and fancies. Why is it that our children do seem to lose interest after a few years of schooling! Why is it that even in our upper grammar grades practically one-half of our pupils need an intellectual forcing process! Why do we have so many young precocious children who soon fall below the average!

The reason lies in the poor motor-life of the child before it comes to school and, consequently, in a too early application to purely mental training when it enters school.

The kindergarten and the primary schooling is to-day in the greatest need of our profoundest attention. If we can correct this we can do away with many of the so-called fads and fancies during later school years.

In my opinion no other age of childhood is more largely handicapped than the pre-schooling age. The home environment of a child up to 7 years of age is the greatest drawback of our civilization.

"Ash barrel backyards" and "clothesline rear porches" are the training grounds of young America. The streets are now unsafe. The houses are over stocked with ready made furniture. Stairs, alleyways and narrow sidewalks are all that is left. Even in the better homes the child has no room to play. Creeping among fancy furniture and bric-a-brac, dressed up like dolls, hours a day in perambulators and not even a mother's lap for first leg-work are possible.

Where do our boys get their opportunities for chores and occupation play? The father is never home and the old-fashioned doing of things in the home and for the home have disappeared. Everything is ready made.

Even if a young child does now get valuable sense stimulations from his environment, where is the chance for him to react upon them with his muscles? *There is no educational value in sense stimulation without motor reactions.* How, then, can he have a well developed motor brain when he comes to us in the schools? Is it wise under these conditions to submit him at once to intellectual training? Is it wise to submit him to long periods of sedentary training? Is it wise to demand application and concentration?

Would it not be better to give him for several years more an environment where spontaneous application is possible, where his motor brain

will have time to mature and where his social instincts can be cultivated by means of free and wholesome mingling with other children? Let us postpone our intellectual education a number of years and let us start a few years earlier to provide for him a playground where his imagination may be stimulated and where his spontaneous enthusiasm may find wholesome and diversified motor outlets.

My second contention therefore is that we must cut off at least two years of our primary school desk education and substitute for these playrooms and play-yards, and that we must get hold of the children at least two years earlier than we do by providing baby playgrounds in every primary school district.

By playgrounds I do not mean only a ball field or a place filled with swings and other apparatus, but a place where the child can get in touch with "mother" earth, a place resembling an old-fashioned backyard and garden and farm, a place full of opportunities for doing things, for caring for things, for testing latent powers of muscular control. A place filled with opportunities for occupation, play and for imitation of everything that moves and acts.

The Social Value of Play. All students of social conditions must be convinced by this time that a mob spirit is very rapidly developing in all our cities and towns. We must concede that our American "mobs" are made of very young people, and we must further, to our shame, admit that these young people have received their education in our American schools. True, many of them live in a home environment which is still elementally foreign.

It is truly astonishing to observe the rapid deterioration of the manners of our young people almost as soon as they leave the school. It is remarkable how soon even the school youngsters degenerate during vacations when they are out of their glad school clothes.

They very soon seem to turn into a crowd of young unmannerly rowdies with nasty speech and nasty manners. Those who are students of social conditions and those who have come into contrast with the "gangs" in our parks and playgrounds are astounded by the fact how rapidly boys and girls, who have only recently graduated as "angels" turn into a tough lot of loafers. Not all of them by any means, and not even a majority of them, but enough to make us wonder what is wrong with our school system.

The real culture which a boy and a girl get in school will show itself best if he turns into a self-respecting wage earner, if he turns into a self-respecting citizen, if he becomes an honest voter and a law-abiding citizen.

What is wrong then with our schools? Is it perchance the hard-

working teacher or is it the system? Is it that the teacher has no real chance to know the boys and girls sufficiently long enough to let their sweet example bear fruit? Can it be that the average teacher has lost her or his hold over the boys and girls because the disciplinary powers have been taken away from them and the "bad" boys do not get spanked sufficiently because the father may have a political pull? This is all more or less true. It all has more or less contributed to the ineffectiveness of overcoming insubordination and vicious habits. But the greatest fault lies in our ridiculous system of marshalling the children in the schools from the first minute to the last.

It is a straight-jacket discipline with the desk as the jacket, the room as the cell, and the magnificent "aesthetically" furnished building as the prison, where no boy may shout nor step from room to room, where they are marched two by two in lockstep to the basement and finally out of the building. Where the teacher comes a half of an hour earlier than the children and where they leave a half of an hour after the children have left, and where the children come noiselessly and on tiptoes into the class room to step into the straight-jacket for the day. Never a chance for the teachers to see their pupils in a truly uncontrolled state.

There is to-day hardly need for more arguments in favor of more outdoor school work, but there is still much need of a better understanding by the general public of the high educational value of motor-activities in the development of an efficient central nervous system, and the great influence which organized play may exert in the building of character. Organized recess exercises not only insure an equal opportunity for every child, be he weak or strong, but it gives the teacher an opportunity to know the real child—the child as he unbends during spontaneous action, as he unfolds during intense application and when close to nature. *The schoolroom child is a product of an artificial environment. The playground child is a product of fundamental emotions and hereditary instincts.* To get hygienic results with normal children no means can possibly surpass in value such vigorous outdoor activities as running, leaping, skipping, bending, twisting, and reaching, especially if they are the result of spontaneous interest and unconscious application. We have, therefore, in the plays and games of children and the sports and athletic activities of youth a most excellent agent in maintaining physiological efficiency during school hours.

Play, then, as a method of recreation and of physical training is unsurpassed, because it uses established coördinations and fundamental muscles, especially if a variety of games are practiced. It develops vital and functional strength rather than mere muscular strength, on account of the large extent to which the majority of the big groups of muscles are involved. It is at least equal to gymnastics as far as these

are used as preventive measures, because play and games are a fundamental demand in the life of young children, and it is only because school interferes too much with these fundamental elements of child life that later corrective measures become necessary. If our educational methods and laboratories and machinery conformed more to elementary child life, less corrective measures would be needed.

But we appreciate also, since the advent of experimental psychology and pedagogy, that a rational, wholesome, safe and sane motor-life throughout childhood affects beneficially not only the child's health, in the commonly accepted sense of this term, but that it affects equally as favorably the intellectual and moral life. We appreciate more than ever that moral strength is dependent upon physical health, that character is in the main a "plexus of motor habits," that "man is what he does," in other words, we know that in order to be really efficient men, we must not only be healthy in body but must have a healthy and rational mind. Rational, safe and sane mentality is the outcome of a rational motor-life, *i. e.*, rational play-life. The motor experiences of childhood determine to a large extent our habits and our character.

Plato said, "The play of children has the mightiest influence on the maintenance or non-maintenance of laws." It is this emphasis on the benefit of play, this great ethical force, which the judges of juvenile courts see in the playground activities, and it is for this reason that I believe in making play a part of our school education. Unlike other cultural agencies, for the development of the moral side of man, we return to the fundamental activities of the body to get the highest type of character. If we once appreciate that mind, body and soul are inter-dependent, we shall see that the soul can best be reached through well directed and organized physical activities in which the whole child is interested. Physical education offers more opportunities for ethical culture than any other ethical agency because it never separates these three parts.

Our school recesses offer a splendid opportunity for the development of good habits of play. To be sure, the large number of children which have to be accommodated makes this a hard problem during school hours, yet I find that organized recesses lead up to better free play and to good habits of recreation. *It is the teacher's principal means of reaching the whole child. It helps the child by counter-acting the evil effects of sedentary occupations, it fosters character and civic virtue, it develops the motor brain, makes intellectual training easier and the whole school life more attractive and last but not least, it makes the teacher more attractive to the children, becoming as much a boon to the one as to the other.*

We are more than ever learning that education for service demands on the part of the teacher a knowledge of the whole child and not a knowledge

of his capacity for academic training alone. How are we going to know about the "wrinkles" in a child's character and how can we find out the "queer" habits he may be developing, unless we give him a chance to expose them? It is a teacher's business to iron out the wrinkles and to train away the queer habits.

One recess every morning and afternoon is, however, not enough for growing children. We have undoubtedly taken a decided step towards better school hygiene in the establishment of two organized recesses. I would most earnestly recommend the establishment of fifteen minutes with every forty-five minutes of sedentary work, for both grammar and high schools. If we had these hourly recreative intermissions, we could devote one recess to organized recreation and one to free play, and spontaneous relaxation. A forty-five minute period of close application to intellectual work, with insufficient muscular activity, is the limit to which children should be subjected. If this were done in our schools it would soon be found that these hourly recreative intermissions would lead to a much more effective intellectual capacity, owing to greatly improved physiological efficiency.

Finis. For this purpose it would be wise to lengthen the session both morning and afternoon, in order to retain the requisite time for book work. A growing child has but very limited powers of endurance, either purely physical or mental. It is incapable of a prolonged passive or semi-passive position of the body, and continued sitting postures are bound to put an unequal strain upon tender and undeveloped tissues. The central nervous system is as yet undeveloped and quite easily exhausted. Only frequent changes with wholesome and vigorous general muscular recreation can possibly bring about a safe and sane school life. It has been proved that even an additional five minutes added to ten minute hourly recesses will result in greater mental efficiency.

AGAINST OVER-ATHLETICISM

BY

JOSEPH H. BARACH

As to whether we as a people are to survive the times—as to whether we are to go on living, growing, improving, and continuing to be an important factor in earth's civilization, and as to whether or not we are going to keep the pace which we have thus far set for ourselves, depends primarily upon the physique we now possess, and the one we will transmit to future generations. In the great average, out of a good animal a good man is probable, and out of a poor animal a good man is doubtful.

If history could be read aright, I believe we should find that so long as physical decadence was averted, national life continued and flourished.

Grecian history for example, teems with evidence of the high type of physical development that existed in the heyday of their zenith.

But when their abstemiousness was lost—when their healthy pleasures were displaced by orgies and excesses—then it was that they passed their meridian.

With us as a people, very little attention has heretofore been given to the physical side of our lives; and it is only in recent times that we have begun to see ourselves in the perspective and have taken heed of the necessity for physical education.

And now that it has come, that in the present day our consciousness to such a need has been awakened, it is well that we exercise judgment and care, so that we may look forward to the best results possible.

There are but few spectacles that give one more wholesome satisfaction and are more pleasing to the eye than the witnessing of a stalwart body of marching men or youths, showing strength and grace and harmony of motion. There are very few scenes that are more pleasing than groups of healthy youths engaged in a game on the athletic field. And what is finer and gives us a purer pleasure than the sight of a strong symmetrical, and agile human being?

Up to this point of development we may well devote ourselves, and with profit. But, with Athleticism as with all things, an excess may be reached, before its presence is fully realized. And with this excess of athleticism, there come certain conditions which may easily be a source of trouble and danger to the individual.

It is this over athleticism and overtraining that I shall discuss to-day, attempting to show its manifestations, the harm that may come with it, and to indicate to a certain extent how such may be prevented.

The human body as a whole, and each organ separately, responds with certain inherent limits to the peculiar demands for work set upon it. This we see in the various occupations as well as in the various forms of sport. The blacksmith develops large shoulder muscles and large biceps; the mail carrier develops the muscles of the lower extremities; the man who lifts heavy weights develops large muscles of the back—and so on. The tennis player develops the forearm; the football player, back and leg muscles; in the runner, the leg and heart muscles show increased development.

But whichever muscles are especially well developed, with them the circulatory system, particularly the heart, shows evidences of the extra demand set upon it; and if the demand has been great, shows a like increase in size and force.

During exercise the heart rate is quickened, and the blood pressure, the intra-vascular tension is increased. The increase in pulse rate and pressure is proportionate to the demand as determined by the severity and duration of the exertion. After the exercise the blood pressure falls to a level lower than normal, and remains thus for a variable length of time.

The function of the kidneys is also altered. First they are influenced by the increased flow of blood through them; the blood stream comes to them at an altered pressure, and at the same time bringing more waste products to be excreted. The other bodily organs are likewise taxed. This increased work for the muscles, for the heart, for the kidneys and for other organs, is primarily a stimulant, and is productive of good, but when carried past a certain point, and by too frequent repetition, reaches beyond the normal and becomes abnormal.

Much of the interest in our search for the harmful effects of over-training and over-exercise, has thus far been centered about the state of the heart and blood vessels, because at the present time we look upon their condition as being indicative of the individuals general state of health. Knowing what the average normal is—for the size and shape of the heart—for the blood pressure and pulse rate, and for the kidney excretions, we have made numerous studies of the ways in which individuals respond to physical exertion and strain, and our results lead us to certain inferences and conclusions which seem unmistakable.

A brief effort of half an hour to two hours' duration on the athletic field will cause marked stimulation in the bodily functions. These effects are for the good when the participant is in health. But up to the present, how frequently does one take the time to consider whether such a participant is in good condition, and whether the physical effort of that day will do him any good, and if it may not do harm?

In a recent series of observations, after approximately one hour on

the athletic field, I find that in 60% of the participants, the kidney function is so disturbed that a cloud of albumin and casts were present, and in about half of these the amount of albumin and blood and casts present, would have been considered extremely alarming had such an individual presented himself for examination to a physician, not knowing its cause. Of course the degree of disturbance depends upon the form of exercise, and in my own observations, running is capable of producing the greatest amount of disturbance. An important factor is, whether the participant has been having a sufficient amount of rest. Staying up late at night, digestive and other disturbances, and existing abnormalities from previous illness; all such influences seem to exaggerate the ill effects from physical exertion.

Now, it is not my intention to convey the idea that one or two hours of active or even strenuous exercise will produce permanent injury to the heart or kidneys, but I do know and say that at the end of a period of training over an entire season, certain changes do become manifest, and as to whether these altered states are innocent or harmful in the after life of the individual, is a very important question. Statistics show us everywhere that diseases of the heart, blood vessels and kidneys are on the increase. Authorities who have studied this question are divided as to the subsequent harm; my own conviction is, that harm does frequently follow in the after life of the over-trained athletes. It behooves us who think of the future to look about and find its various causes and forestall them if possible.

In the runner—after six to nine months training, the heart will usually show a marked enlargement—frequently much beyond the normal, and the blood pressure will show a level considerably higher than normal. These effects are more marked as a result of brief and hard training, which I am certain is particularly harmful. In many instances, after cessation of training and exercise, the over-development gradually subsides. The heart shadow as seen by the X-ray recedes to the normal, and no ill after effects seem to follow. But in a conspicuous number, and in my own observations, in perhaps the greater proportion of highly successful athletes whom I have known since they left college and have stepped into the various walks of life, the recession toward the normal did not occur insiduously, and not without a repetition of disturbances for perhaps several years. An enlarged heart capable of intense strain is of no more use to an individual who is to lead a comparatively quiet life, than is a 60-horsepower motor for an automobile traveling over level city streets.

Thus far we have considered the effect of exercise and training upon the perfectly healthy. But in the school as a whole, we will usually find a considerable proportion of students who have heart or lung or kidney

affections, or tendencies to disease of these organs. In these cases the disturbances are more serious and the ill effects are fraught with actual danger at times.

To get the best results, we should carefully consider the health of each participant before his partaking in any form of exercise. His general condition should be carefully considered, his lungs and heart should be critically examined by specially trained physicians, his blood pressure should be estimated, and a urinalysis made.

A trained medical man can prescribe the form of exercise for which each student is best fitted, and whichever kind will do him most good. He can determine when the amount may be increased and when it is to be diminished.

Another function of those in charge should be to eliminate the element of constant overstrain and strife. This frequently defeats the very object of athleticism and creates many fanatics. It takes the element of sport out of the play, and that which should be a source of mental relaxation and a physical pleasure becomes a competition full of stress and anxiety.

I have it upon authority from men who know, that the North American Indian—who was fond of games, and their descendants who now enter into the various teams throughout the country, when not spoiled by our strenuous influence—enters into the game and plays it with the healthy spirit of a child—he plays for the sake of playing—for the love of the game itself, rather than to vanquish a foe, as we do, upon the gridiron.

The attitude here taken, has come to me from observation covering a period of years.

It has often seemed a pity—that some of the fine athletes I have seen did not stop short of where they did—before they actually injured themselves. One athlete expressed himself to me, saying that after his successful football career he has always felt that the game has taken something out of him which he feels he can never regain. I presume he meant that he had already taxed his latent physical reserve force to its utmost—and that he finds himself incapable of his former endurance. It is true that very few once successful athletes, as is said in athletic parlance, ever “come back.”

Withal this—I am well aware of the actual value of athleticism—and competitive athleticism—in the life of youth and man. Its physical value, its moral value and its psychological value. And that the physical accomplishment may be but a manifestation of a strong will and a latent power, and what a loss it may be to suppress these dominating influences of our lives. I am cognizant of these facts—and therefore I believe to

the utmost in athleticism. But, it is over-athleticism against which I would speak—such as is the result of overtraining, such as brings harm in its train; and should be avoided.

And that in our athleticism, we should by all means, retain the spirit of the play, and avoid the excesses that come with keen competition, so that we may get out of this phase of our lives—what nature intended, when it gave the play instinct to the animal—man.

HIGH SCHOOL AND COLLEGE ATHLETICS AS VIEWED FROM THE MEDICAL STANDPOINT

BY

J. W. KIME

Recently, the high schools and colleges throughout the country have taken great interest in athletics and much enthusiasm has been aroused over the subject. Only a few years ago the events were limited to baseball and football. More recently, basketball, track running and hurdling, vaulting, jumping, discus throwing, rowing and other features, have been added to the list.

The true theory of education is, the symmetrical development of all the faculties of the student, whether mental or physical; and the prevailing notion is that athletics contributes toward this end; and particularly, that the physical side of the man is strengthened and fitted for greater endurance in after life by the athletic training now recognized in the curricula of the leading high schools and colleges throughout the country.

To this general theory no exceptions can be taken; only toward certain essential features can criticism be directed.

All athletic events must be reasonable and easily within the strength of the boy, otherwise infinite harm will be done to him. Whatever calls for the last ounce of strength, the delivery of the maximum of every cell in his body, cripples and injures the boy for life just as certainly as the turning of every unit of steam upon the piston strains and wrecks and ruins the engine for any future use. There is a margin of safety, a limit beyond which the machine can not be driven; there is a limit beyond which the boy may not safely go and not suffer in after years because of the strain thus laid upon him.

From every physical standpoint the human body is a machine; it is built for work and like every machine, it has its capacity and its limit of safety. Beyond these limits it must not be driven.

The human engine is subject to every law which applies to engines of every type. If the designer has fixed the capacity at one hundred horsepower it must under no circumstances be harnessed to a load of one hundred fifty horse power. It is true, that by lashing it to the point of bursting, by straining every joint, by forcing upon it the last unit of steam, it will yield this power, but the engine is wrecked; it may creak and groan and complain for a time but its usefulness is ended and the scrap pile is its early fate.

The boy has a hundred units of power; he may safely deliver this load every hour during a long and useful life; his engine is built to this gauge; it will not disappoint him if used as his Maker designed.

As with his prototype in steel, we may speed up this boy, we may load him with two hundred units of power; we may lash him with ambition, we may force him through his pride, we may encourage with reward and bring him with thunderous applause across the line—but the human engine is wrecked; it may creak and groan and complain for a time but its usefulness is ended and the scrap pile is its early fate.

There are athletic events, especially those of the track, that are too strenuous for the boy; they are unreasonable, inhuman, brutal. Were these boys animals, such a wail would arise that no repetition of such scenes would ever be made. The authors of such cruelty would be jailed and they would be shunned by all decent people. But, being boys, only boys, such doings are classed as "sport" until the physician a few years later says, "tuberculosis of the lungs from overstraining and injury in athletic stunts," "a leaky heart from too great violence in high school days on the athletic field." A monument in the cemetery reads, "The Lord has called him home"—a grievous falsehood to cover up our crime against young manhood under the guise of education.

What are these things of which I speak and which men, educators, in charge of our boys, have placed upon the curriculum of every school as a part of the educational system for the youth of the state?

Every track event above the 220-yard dash, belongs to this class; the quarter-mile race which calls for the highest speed, the last ounce of effort the boy can command from start to finish; the half mile race, the mile race, the two-mile race and everything of the class or kind. These things are not educational, not developmental, they are folly, injurious, inhumane.

In all these races many boys reach the line completely exhausted; every cell and fibre of every tissue in their bodies have been called upon to give their last atom of energy; heart and lungs have been driven to the extreme limit of their endurance, the vessels are at the point of bursting under the mighty pressure of the heart, and frequently these vessels do give way and hemorrhages occur. Many fall across the line and are carried from the field struggling for breath.

But it is all "sport" and we are wisely informed by the trainers that "the boys are not hurt, that they will be all right in a few minutes." But not so with the man who knows what the boy is and the limits of the boy.

Few physicians after witnessing a strenuous field meet have anything to say in favor of many events which now are put upon the track,

and none who fully appreciates what it means would permit his boy to train for them.

There is, indeed, a sane and an insane athletics. The sane trains and develops the boy for his future battles in life, it gives him confidence and strength; it develops his physical powers and increases his endurance; it makes of him a better and a fitter man.

This is athletics within the capacity of the boy, within the margin of safety. This is education.

Insane athletics has no limit of safety; its limit is the limit of endurance, the last ounce of strength, the bending of the bow until ready to snap—yes, until the yielding fibres of the wood are creaking beneath the string.

Insane athletics has but a single thought, a definite object in view, nothing must stand between—the goal must be reached, the line must be crossed in advance of the adversary, cost what it may.

This is folly, not education.

Against insane athletics the medical profession with few exceptions is filing a vigorous protest. The leading medical publications have, editorially and otherwise, proclaimed against the harmful features in athletic training and in final contests. Physicians meet daily with end results of the athletic field and of the folly of demanding from these young men the final effort at their command.

At a recent field meet in Iowa, a physician was consulted by the father of one of the contestants concerning the competency of his son for the final race. The physician replied, "Let him go, he is no worse off than the rest of the boys."

"But would you let your boy run the race?" persisted the father.

"My boy is better taught than to have any desire to do such foolish things," the doctor said.

And this physician, one of the sanest in Iowa, expressed the sentiments of every physician who has given a moment's thought or attention to the follies of the track.

In crippled hearts and injured lungs; in undue proportion of tuberculosis; in hardened arteries and ruined kidneys; and in physical damage of many kinds, we find the story inscribed in the doctors' records of the after lives of these same athletes—and these broken bodies we must recall were the fittest in their class.

Indeed, it was this same story in the case records of an institution for tuberculosis which prompted me to seek the cause for the wreckage of these young men—the very flower of physical fitness among our youth.

We would look last among our strong young men, our athletes, for recruits for our tuberculosis sanatoria. On the contrary, this class contributes an undue number to our hospital ranks.

Why do so many young athletes fall into the doctors' hands suffering from tuberculosis and heart disease?

Athletics has become a feature of every high school and college work. Boys, in the various classes and in the grades, form teams in football, basketball, track work and other athletic sports, each student selecting the events for which he will enter. There is no physical examination, the physical director merely inspecting the boys and no physician determining their fitness for the work they have chosen to do. The condition of heart and lungs for the great strain to be put upon them is not inquired into nor are examinations made from time to time to determine the effects of training. The boys are left almost wholly to determine for themselves their physical fitness for the strain.

And we are all familiar with results—these boys in cross-country runs, going at top of speed for a number of miles, each striving to beat his fellows to the line. As they approach the goal the last fagots are thrown into the furnace—every energy consumed—panting, reeling, staggering and falling, they hurl their limp, exhausted bodies across the line.

And this in the name of education and under the guise of physical development!

We would not permit such cruelty to a dog.

And, later, when the boys who have best endured this strain, join with others in the interscholastic field meets, there are repetitions of the scenes enacted upon the home track, save here, class spirit, civic pride, the winning of the cup, the class yells from the benches, all conspire to compel the supremest effort from these young men.

In the inter-collegiate contests, while the men are more seasoned, we still find them falling upon the track and across the line to be carried from the field.

To those who follow these meets, viewing the contests from the seats, merely in the light of sport, there is little significance in what I say. To those upon the benches, enjoying the sport, the goring of the toreador, the impaling of the horse upon the horns of the maddened bull, are matters of little moment—merely an incident in the game. A boy, falling here and there, exhausted, injured for life—what matters it, for is it not all in sport?

But to him who follows these boys from track to tent, interested not at all in what they have done, but in the boys themselves, there is a significance both wide and deep, a significance demanding of us our earnest protest against these follies in the name of sport. Boys, nor men, can thus abuse their physical bodies without permanent harm; no mechanism, even of the strongest steel, can be driven to the point of breaking and again respond to its accustomed force.

We follow these men in later years—these giants of strength and

endurance whom nature has so abundantly blessed—"strong men rejoicing to run a race"—and we find them in all too frequent numbers in our sanatoria and hospitals, broken beyond repair—wreckage in the human scrap pile—a fact supported by the records of every such institution in the land.

And, would I abolish athletics?

I would make athletics sane. I would not force a boy, as I would not drive a horse or abuse a dog.

I would make every feature of athletics far within the strength of the boy. I would safeguard it at every point by thorough medical guidance.

I would eliminate all that is harmful, and utilize that which will develop the physical body of every boy, and every girl, regardless of ability to compete on track or field.

Physical culture and development for all, rather than the pace which kills, for the few, would be my aim.

School athletics as now conducted means little to the student body, and the average school patron has little conception of what it is.

Indeed, in all matters educational, we are much inclined to place all responsibility upon the school board—elected without consideration of fitness—and upon the instructors, dismissing the entire subject from our minds, of no interest to us whatever, paying cheerfully our money as we pay all bills for educational purposes, knowing only that Johnny goes in at one end of the school, unable to read, and comes out at the other with a diploma in his hand.

Of athletics, we know even less. It comes to us purporting to develop the physical side of the boy and girl, to make them strong and fit them for the battles of life, to give to them strong minds in bodies that are strong. We, therefore, cheerfully invest in track and stadium, in physical director and coach and paraphernalia for all the games. For are not our boys and our girls to be trained and developed to the fullest capacity of each?

Ah no, confiding one, this is not the true conception of school athletics; this is not what it means.

In a certain high school, typical of all the rest, are two hundred girls and one hundred fifty boys. Among the girls are many who are perfect types of young womanhood—with bodies full and strong; some are undeveloped and narrow chested, with tendency to spinal curvature, or tuberculosis, while nearly all may be made more fit by proper physical training. And what is true of the girls is equally true of the boys; some are fine physical specimens but most of them may be improved.

And with this statement of the case all educators will agree.

The school year opens, and the athletic season begins. The two hundred girls are stricken from the list; there is no athletic material in them; they can bring no honors home from track or field, from diamond or gridiron. They may be in need of physical training, for right development, but the instructor is busy with the athletes and the physically unfit must bide their time—which never comes. They may sit upon the benches and clap their hands; they may cheer and toot the horn and join in lusty cheers when the class yells are given, but they are quite forgotten in the training room and on the open field.

One-half the boys have no athletic aspirations, or are physically unfit; so they may stay at home or join the girls upon the bleachers and blow the horn and yell.

A few from the physically fittest, the most perfect specimens among the boys, are drilled, and trained, and coached and driven; they are fed and watered and are brought to the topmost notch of physical power—for a moment, for a certain event, to carry the honors home from the field.

And this we are told is athletics, the consummation of all our efforts for the physical development of our boys and girls! How different from our conception when we cast our vote for school athletics!

Athletics is a game of chance, a contest, a race in which the runners are men and not horses, in which the feats are of physical endurance and not of development.

Socrates observed, even in his day, that "The strength of the body is destroyed by violence," a proposition so sane that none can doubt it; and yet we submit our boys to a violence to which we would under no circumstances submit a physical machine of any type. And then we are coolly asked to prove that the boy is harmed.

There is such a thing as common sense.

Were proof needed, however, the daily press affords numerous items like this, taken from the *Sioux City Tribune* of July 12, 1913: "Floyd Smith dies suddenly of acute heart dilation—He was one of the best ends that ever played football for the local school."

The demand is for boys and girls best equipped for the race of life—the making of every boy and every girl the best that can be made of them—the strongest, healthiest, brainiest that the best educational system can evolve. But instead, we are attempting to make of the fittest, more fit, and leave the others to their fate.

Recently, while making the rounds of the wards of an institution for feeble-minded children, it seemed to me that the efforts made in their behalf—with their imperfect bodies and infantile minds—were scarcely worth while; but it was inspiring to witness the earnestness and enthusiasm of the superintendent as he noted the things the children could do.

And finally I said to the doctor, "But what is the object, what the aim of all this effort, they can never be brought to the point of service?"

"The aim is simply this," the doctor replied, with some impatience, "to make of these little ones everything it is possible to make of them, both in body and in mind."

And are not our normal boys and girls in the public schools worth just as much as these defective ones? Shall we do less for them than the state is doing for these imperfect children? I speak for every boy and every girl, the weakest and the strongest, but I speak first for the physically unfit.

The instructor must have a record of the physical status of every student, noting particularly the defects of any child, and to these he must direct his careful attention. His work is with the student body, with every member thereof, and he may no more neglect it than may the instructor in language or in mathematics. This is his function in the school—to develop the physical side of every child, of every boy and every girl, and not to train the physically perfect for exhibitions of feats of endurance which only do violence to those engaged in them.

ATHLETICS FOR ELEMENTARY SCHOOL BOYS

BY

EDGAR L. RAUB

The new conception of athletics as a part of the public school establishment, supported by taxation, under competent and trained supervision, substitutes a well organized and adequately equipped playground, with physical exercise for many boys in diversified athletic sports, for the unsupervised vacant lot activities of the few.

The support of public school athletics by the community is not merely a matter of providing amusement or means for unregulated exercise. It is defensible on hygienic and educational grounds. Wisely conducted, athletic sports develop desirable physical characteristics and equally desirable moral ones, such as pluck, self-reliance, generosity and good will toward an opponent. No one can doubt that athletics furnish a salutary, potent, and necessary contribution toward the training of character.

In these days of wealth and luxury and love of ease, the development of virile and resourceful men is a subject worthy of public concern. Without antagonizing the purposes of peace movements, we may well think of encouraging masculinity as a national asset. From the emulation of the athletic field, come the strength, courage and good temper that athletics both demand and supply; the valuable discipline they enforce; the training to face responsibilities and go through ordeals.

As a nation we have not taken such widespread interest in athletic sports as some others. Although there is everywhere among us the instinctive love of sport, athletic training and proper facilities for sports are almost negligible, as far as the young are concerned. Of course there is baseball everywhere, and great interest in college football, but where in our towns or small cities can one find a running track, such as exist so generally in England, Scotland, or in Canada? A beginning has now been made for the younger boys. If athletic skill and the training that precedes it have hygienic and moral value, they are proper matters for public concern, and no other department of the government can administer them so effectively as the school department.

The story I have to tell concerns itself principally with the history of what is actually done in Boston in athletics for the elementary school boy. It presents a concrete example as worked out in Boston, and in daily use. My familiarity with it is based on daily participation in its administration as head play-teacher on one of the larger playgrounds, for the last five years.

In Boston the elementary school boy sports are under *bona fide* school organization, under school regulations and school rules. They are untouched by outside interests. No trophies are given, neither cups, medals, or buttons. Winners of events in the Spring Meet, and winners of division league schedules in baseball and soccer, receive certificates testifying to the fact. These like graduation diplomas, bear the signatures of the Chairman of the School Committee and of the Master of the school attended by the winner.

Exclusive authority over school athletics, including the appropriation of money for playground work, has been vested in the Boston School Committee by State legislative enactment. The Department of School Hygiene, under its able Director, Dr. Thomas F. Harrington, has from the beginning managed the sports of the boys, with hygienic and educational ends in view. Theoretically, this would seem to be the only defensible policy anywhere. In practice, difficulties arise. At first there was a temptation to secure interest by artificial stimuli, such as prizes. This is done now in the municipal games conducted by the City of Boston, outside of the jurisdiction of the School Committee. It is, in fact, almost the only way boys can be reached apart from the school system. Through the schools they are easily reached through the games alone. Medals were at first given to winners in the games of the elementary schools, but this practice was soon abandoned, with no diminution of interest. The interest of the boys is now centered in the games for the games' sake, and that of the playteachers in realizing the greatest possible good for the greatest possible number of boys. This course put the playground sports on a higher plane.

While high school athletics in Boston are also exclusively managed through the Department of School Hygiene, this paper is to be considered as treating solely of the elementary schools. The playground instruction is given by men engaged in regular classroom work, sub-masters and other men teachers eligible for sub-masterships. These men are not simply athletic coaches, trying to produce athletes, but school-masters, many of them college men with athletic records of their own, endeavoring to develop well-balanced bodily strength and vigor, through sports adapted to the purpose.

The City of Boston owns about forty municipal playgrounds, the larger ones equipped with locker buildings having sanitary and shower bath facilities. Twenty of these playgrounds have more than five acres each of play area, eight of them more than ten acres each, and one, Franklin Field, contains 77 acres, nearly all of it devoted to playground purposes. These grounds are controlled and maintained by the Park Commissioners, by arrangement with whom the School Committee, by authority of legislative enactment, has exclusive use and control

for the elementary schools between the hours of 4 and 5.30, on school days. The School Committee, exercising the right given by legislative enactment to appropriate money for such purposes, owns and furnishes the equipment for the playground sports, pays for labor, teaming, and other expenses incidental to the preparation and maintaining of the grounds in good condition for the school games, and provides the paid corps of playteachers.

Boston is conservative in the range of athletic sports followed, and while providing for a variety of athletic interests, affording exercise for different groups of muscles, avoids the elaborate program of events followed in some cities. Besides baseball and soccer, the principal games for team play, there are short dashes, the shorter runs, and relay races, classified as track sports, standing broad and running broad jump, running high jump, running hop, step and jump and shot put, classified as field sports. There are no long runs, no hurdle races, and no heavy shot.

The Spring Athletic Meet is held annually in June. The track and field games named, and sectional baseball games, are contested. The division of boys into three classes, as followed elsewhere, is not considered to differentiate boys sufficiently, and Boston accordingly makes four classes. Boys under 4 feet 6 inches in height, measured in stocking feet, form a class by themselves. These boys are too small to compete against boys a few inches taller, but not too small to take an intelligent interest in sports, nor too small to derive benefit from their training. The events in which they are entitled to compete are suited to their powers. By forming a special class for these little fellows, they are brought out in large numbers, and get a start in athletics a year earlier than they otherwise would. In the dashes, they run only 35 yards; they have no short run whatever in the athletic meet, but on the playground run 55 yards occasionally, but rarely more than once on any one afternoon. They run a relay race of 55 yards at the meet. The only field event permitted them is the broad jump.

My own experience with these little chaps this Spring was rather interesting. From the biological standpoint, boys of this age, in the neighborhood of ten years, are at a comparatively sturdy and undisturbed physical condition. I had perhaps forty or fifty of them each afternoon, all eagerly interested. They worked in squads of ten or twelve. From the entire number I selected the best two and entered them in the competition of the Spring athletic meet. These two, competing against the 68 other schools in the city, won second and third places. The fact of winning is in itself of little consequence; the value lies in the lesson learned that boys of this age can profit by the coaching of the playteacher.

In addition to the restrictions upon the smallest boys, the same policy is carried out throughout the classes. The shotput is confined to the largest boys, classes A and B. Class B puts the 5-pound shot, class A the 8-pound shot. The 12-pound shot is not used by elementary school boys. The running hop, step and jump, on account of its difficulty, is restricted to class A.

In relay races there are no trial heats. For these races there are preliminary elimination races a week or more before the Spring Meet. The entire city is divided into eight geographical districts. The schools of each district compete to select a relay team in each class to represent the district at the Spring Meet. Each team must be wholly from one school. Eight teams, therefore, in each class, meet in the competition of the general meet. The eight teams of class A run a single heat to determine the winner. The other classes do the same. Thus no boy is required to go through the strain of trial heats. No boy is allowed to compete in more than one event, relay races not excepted. This provision has a two-fold usefulness. It is a preventive hygienic measure primarily, and at the same time allows the competition of an increased number of boys. No boy is allowed to compete in the Meet unless certified by the school physician or the family physician as being in fit physical condition. A squad of school nurses is present at the Meet. At the Meet held in June of the current year there were no accidents nor any cases of over-exertion among 1,000 entries. Boston, so far as can be learned, goes farther than other cities in these hygienic restrictions, considered to be necessary for safeguarding the physical well-being of the boys.

It follows that the same track and field sports contested at the Spring Meet form a large part of the training given on the playgrounds during April, May and June. They are supplementary to the rather one-sided exercise afforded by baseball, which occupies a part of the time of most of the boys. There may be differences of opinion regarding the hygienic value of baseball, but its popularity is undeniable, and there is no attempt with us to supplant it or to antagonize it. The same boys take part in baseball and track and field sports. Baseball can hardly be said to furnish an all-around development. The pitcher and catcher are often overworked, the outfield has ordinarily little to do. In the average game of nine innings, each boy goes to bat about five times, and gets on base an average of twice per game, having thus few opportunities for base running. Nevertheless, the game has undoubted hygienic value, and its attractive power is of great assistance to the playteacher.

The playteacher gives a part of his time to coaching in base running, good form in batting position, in bunting, in the fielding of each posi-

tion, in team play at the bat and in the field, and, by his attitude more than by exhortation, influences fair play and friendly rivalry.

It was at first difficult to secure the interest of baseball players in the track and field sports, but this has been successfully accomplished by showing how the latter improved the efficiency of the ball player in his own game. The training in the dashes and runs, for example, contributes directly to improved base running. In the same way, soccer players are easily convinced of the value to their game of the drill in the runs.

In the playground training in running, each boy takes his turn and gets his equal share of the exercise. One boy in a hundred is a natural runner. The others need instruction, and a large proportion of them can be developed into good runners. We begin with the crouching start, train the boys in the correct use of the leg as a whole, in lifting the knee, in the use of foot and ankle. As soon as one squad has had as much as is good for them, they are dismissed to play as they please, and another squad is trained. Boys like the systematic drill. There are enough points of skill and study in good running to interest boys of intelligence.

The running broad jump has its special points for study, but is not too difficult for boys of even ten years. The run to the take-off, the lifting of the body high into the air, the lifting of the knees, the shooting forward of the feet when landing, require practice and afford a field for skill. The mastery of all these points requires time and but one thing is attempted at a time. Before a boy can tire of the training in any one element of good form in jumping, he is put to work on the next step, and his interest grows. Over-exertion is carefully guarded against.

The high jump, with the turn, is a problem in dexterity. Form, or knack, is an essential in all track and field sports, but especially so in the high jump. No jumping for height is undertaken until good form is fairly well mastered. Correct form will add several inches to the height attainable. The discipline in mastering it is excellent. The high jump requires the vigorous use of the muscles of the trunk, in addition to those of the legs.

The shot put does for the arms, shoulders, and muscles of the trunk, what running and jumping do for the legs. Form is again a factor in getting good results. Strength of arms and shoulders is required. The smaller boys are not permitted to take part in it, and great care is taken with the larger boys that there shall be no over-taxing.

All these games demand and develop strength, activity and skill among physical qualities, pluck, courage, intensity of purpose, among

mental attributes, fairness, courtesy and kindness; the ability to bear defeat without bitterness, to accept victory without vanity.

At the close of school in June the playground work is continued through the summer months without any break, and with a continuation of the same policy as during the school term, as to sports and classification. The corps of instruction is necessarily changed as to individuals, but is of the same type of men. The summer work is also under the management of the public school authorities, through Dr. Harrington, and therefore carried on with regard to the same policy of hygienic control. The instructors are on duty throughout the day. A series of local meets is carried out through the summer months.

From the opening of school in September to the Thanksgiving vacation, soccer takes the place of baseball, and track and field sports are continued as long as the weather permits. Soccer, played with a perfectly round ball, is a running and kicking game, without mass play, and free from the liability to injury apparently inseparable from the so-called Rugby game. The rules of the game itself provide amply for the penalizing of rough play that contains the slightest element of danger. On the other hand, soccer is far more vigorous than baseball, and requires careful supervision, lest ambitious boys may be exhausted by trying to cover too much of the field. Each boy has his limited field of action, his range of offense and defense, limited by his functions as a team member. When he has to act, he has to do it quickly and vigorously. His runs are short but fast. Unexpected situations require constant alertness, and forwards, halfbacks, and fullbacks are alternately in full action and in quiet easy movement backward and forward in anticipation of necessity of immediate action. Soccer has gained great popularity in Boston, and an average of 3,000 elementary school boys play it daily. A game involving team play has been needed for the cool Autumn months, and soccer meets this need fully. Rugby is too dangerous for small boys. Soccer has been introduced into the high schools of Boston. The small expense connected with the game is an element in its favor, wherever the cost of a uniform is a factor.

On our playgrounds the soccer fields are laid out with regard to the same principles of hygienic control. Fields for the big boys are 100 x 75 yards, somewhat smaller than full-sized fields, and those for small boys are 80 x 60 yards, with a preponderance of small fields, in the proportion of four to one. The playteacher's work consists in instruction in kicking, dribbling, passing, dodging, various ways of stopping and returning kicks, and above all, in team play, which is a way of saving the maximum of efficiency with a minimum of effort. Soccer develops quickness, staying power and dexterity.

The problem of finding enough playground space for a large number of boys is usually troublesome. The room required for baseball presents a difficulty. A full-sized baseball diamond requires about an acre of ground, and accommodates only eighteen boys. On an equivalent amount of space can be placed an eight-lap running track, pits for the standing broad jump, running broad jump, high jump, running hop, step and jump, two shot-putting pens, easily accommodating in the course of an hour about two hundred boys. Thus, by devoting a part of the playground to track and field sports, more boys can be benefited.

Any scheme of athletics for school boys must provide facilities for large numbers. The games must have intrinsic interest, be capable of developing balanced bodily strength and activity, and should influence the intelligence and moral nature. They should be diversified, calling into vigorous action different groups of muscles. They should not overtax, nor repel by too great difficulty, but should put a tax on the boy's muscular system and on his will. They should encourage rivalry and the desire to excel, but not at the sacrifice of fairness to an opponent. Systematic instruction should add to the interest by making improvement easier, through the simplification of difficulties. These conditions are satisfied in a high degree by track and field sports.

The chief features of the present state of Boston's plan are, the entire separation of school athletics from outside interests, their close connection with the regular school work, the type of athletic sports chosen, the hygienic restrictions upon these, the spirit of the training given, the type of men giving instruction—teachers, not simply athletic coaches—and, more than anything else, the elaborate precautions taken to safeguard the boy, while making ample provision for his well-balanced physical development; the whole plan operating under special legislative enactment.

PLAY VERSUS WORK IN EDUCATION

BY

GEORGE E. JOHNSON

In the popular sense, play is what you pay for doing; work is what you *get* paid for doing. In the pupil's mind, play is what you want to do; work is what you don't want to do. From the individualist's point of view, play is the thing worth while; work is worth while only as a means of providing more money that may be spent for play. From society's point of view, work is the thing worth while; play is a kind of sop helpful in keeping the individual contented in his work.

When you come to think of it, there is something very inconsistent and very unfortunate in these notions; for much of the best work of the world has not been done for pay, the pupil learns faster when he enjoys his studies, and the greatest of a man's achievements in life—his master work—is generally what he wanted to do.

The not very widely spread notion that play may be productively useful and work give pleasure, is not at all new. It is as old as Fenelon, Postalozzi, Froebel, yes, as old as Plato and probably older. Yet we who are concerned with education, who were long since familiar with the idea, are in practice forever dodging the issue. We believe in play, but then work must be done and we just can't fix our eyes on what *must* be done and play our way to it.

It is my wish to suggest that we have now come to the point in education where if we would but fix our eyes upon play and not upon work we should find that we could play our way to necessary accomplishment better and quicker than we ever worked our way to it. I have the more courage in raising directly the issue between play and work in education here at this International Congress on School Hygiene, because we all believe that health is an end in education—physical, mental, moral, social, and spiritual health. And, I hope sufficiently to suggest if not perfectly prove that play—not work—is, and in the nature of the case, must be the true source of health in this larger meaning, a source contributing even more than all other aids in school hygiene combined.

Let us see why this must be so.

Without entering at length into a discussion of the nature of play, it may be briefly stated that all plays and games are imitations or repetitions of types of activity that have been followed in the development of the race. Further it may be stated that the play of animals varies according to the structure on physical characteristics of the animals.

The play of puppies and the play of kittens, for example, differ as the structure of their bodies and nervous systems differ. Dogs in their play run, chase and tear or cling with their teeth more than cats. Cats in their play stalk, scratch and strike with their paws more than dogs. These differences coincide with the differences both as to the structure and the experiences of the animals. Now some biologists tell us that the structure of the cat's paw and that of the dog have come about in each case through the differentiation of activities pursued by the cats and the dogs of previous generations. Function, they say, determined structure. To illustrate: The amoeba has four functions, namely, nutrition, locomotion, sensation, reproduction. Yet it has no special organs. It eats, digests and assimilates food, but it has no organ of digestion; it moves towards what it wants and away from what wants it, but has no organs or locomotion; it responds to stimuli but it has no nervous system; it reproduces its kind but it has no organs of reproduction. As we go up the scale of life, we find these same four functions and no more. But there is a tendency in nature always to do things better and better and special organs gradually developed. These biologists, therefore, formulated a law, namely, that function determined structure, that doing fashioned the organ that does the doing. For example, so they believe, the structure of the human hand and the structure of that part of the nervous system controlling it differ from the structure of the hand and of the corresponding part of the nervous system of the ape because of what the hand of man has done. The increased function of the human hand over that of the ape has determined its distinctive structure.

Thus the various and marvelously complex organs of the human body, according to this view, developed through differentiation of function. The law holds good also, they thought, when function diminished. Structure then deteriorated as illustrated in the vestigial organs of the human body such as the notorious and nefarious appendix and the muscles that once moved the ears or nose. (I remember that, when I was a young school boy, I had unseasonable pride in my ability to move my ears without moving my scalp and to move the end of my nose up and down like a sheep. But I was not then aware that there was such a thing as reversion.)

There are other biologists, however, who believe that structure preceded rather than followed function. According to these (and they seem now to be having their inning), structure was determined in the germ plasm and not at all directly through exercise or experience. Their proposition is the converse of the other, namely, structure determined function.

Now both these propositions are of great interest to the student of

play, for each suggests one and the same corollary, namely, structure demands function. It does not matter materially to us whether nature first created a structure and then found a use for it or first found a use and then created a structure to meet it; whether the ancestors of the wart-hog, for example, developed callosities on their knees by kneeling as they rooted for a living or took that advantageous position because they were born with callosities on their knees. In either case we come face to face with the fact that when in the course of generations structure has been developed, or mutations in structure have come about, in each succeeding generation this inherited structure demands its appropriate function. During the long process of evolution the great complexity and inter-relations of the members and organs of the human body and nervous system have been developed through function or through mutation, as the case may be, and as each organ evolves through the various stages of immaturity toward maturity there is at every phase of its development, under the physiological condition of good nutrition and appropriate stimuli, an impulse, a hunger, a craving, a passion, a demand for the same general kind of activity or function that determined, or accompanied, the corresponding structure in the species.

There are infinite manifestations of this craving for function. When a blind child stands before the window and flickers his open fingers before his face letting now the light, now the shade, fall upon his sightless eyes, he is trying to satisfy the craving of the optic nerve which had been cheated of its appropriate function. When the idiotic child sits through long hours with arms folded upon a bench before him and beats his head upon his arms with insatiable zeal until great callouses are formed upon his wrists and forehead he does it in response to this craving for function. When the infant smiles into its mother's face or grasps with its chubby hand, or kicks, or coos, or strives to lift itself for freer vision of light or shadow or color or object; or listens for a sound, or creeps, or climbs, or handles, or tastes, the same law is manifest. When the child responds to the awakening power of speech, or of memory, or of strength of limbs, or of appreciation of companionship or of social relations, or of reasoning, or of expression in different forms, or of leadership, or of organization, again we see structure demanding function. When a lad of the streets snatches and runs in the hope of being chased, when he stones cars or windows, or pries open a door in the freight car; when he pilfers trinkets and stores them in a rendezvous, or, inspired by a nickelodeon, breaks and enters a store for mischief; when he joins a gang; when he steals lumber and builds a hut and plays cards and gambles there with his gang, the law of structure and function still holds. When the "spirit of youth" seeks the "city streets," or a youth the

company of a maiden, or a young man the warmth and brilliance of the saloon, or the colored lights of the city, where he would not be seen, here also, in its last analysis is a response to this same deep-seated craving for function. When a mature man or woman strives for some desired achievement in society, politics, literature, art or religion, or seeks for personal power or wealth or fame, the same law holds. Play is that for which man is structurally predisposed. To our forefathers it was "original sin." To us it has as good a right to be "original" virtue.

The educational significance of this is apparent. If the play interests have their genesis in structure and if, in the case of the young, the development of structure or organ depends upon its receiving appropriate exercise especially during the period of growth as is now generally believed, the educational value of play in conserving and developing hereditary powers is apparent. One need not say with Groos that the young play in order to prepare for future serious occupations or with Hall that the young play in response to inherited memory of past experiences of the race. One may rather say that play is the normal functioning of structure in accord with its own peculiar nature and needs. Play is of the present, rather than of the past or of the future. Its existence may be explained by the past, its nature may be a prophecy of the future, but play is essentially a manifestation of the present life and present nature and present needs of the organism. Yet play does educate, does prepare for the future, for the mature man has no powers or interests or occupations that are not based upon past powers or interests or occupations of the race and that do not in the fullness of time appear in prototype in the plays and games of childhood or youth. So far as education is concerned with the development of right interests and powers, play is the line of least resistance, least fatigue, greatest plasticity, and greatest interest or intensity. So far as these interests and powers can serve social ends, play, not work, remains logically and naturally the most efficient means of education.

Again, so far as education is concerned with physical development play in education is essential. Since the play interests have their genesis in structure which at its various stages of development calls for exercise appropriate to its needs and powers, it necessarily follows that the kind of exercise supplied by play must in turn greatly stimulate growth and development. Moreover, the emotional accompaniment of joyous participation in play and the effect upon the vaso-motor system tend to bring about a condition of full nutrition of the developing organs. In short, appropriate play provides the exercise which is best suited to the present needs and powers of the developing organs, the exercise which best stimulates growth and structural change, which, also, stimulates the

vaso-motor system and tends to bring about a condition of full nutrition.

But structure may function in work. Can we make still clearer the distinguishing characteristics of play and work and why play in education is superior to work? Perhaps it would be helpful if we should contrast in parallel columns the chief physical and psychical elements of a given activity under a play economy and under a work economy. In education and in life any activity tends to fall under:

*A Play Economy

or

A Work Economy

According as it is conditioned by

Structural predisposition.

State of nascency.

High plasticity.

Surplus energy.

High irritability of cells.

Freedom.

Impulsion.

Interest.

Growth.

Imagination.

Ideal.

Pleasure.

Lack of structural predisposition.

Prematurity, senility.

Low plasticity.

Fatigue.

Low irritability of cells.

Restraint.

Compulsion.

Indifference.

End of growth.

Lack of imagination.

Lack of ideal.

Pain.

The elements which make for normal, healthful, happy, efficient effort are the elements characteristic of play and not of work so far as the two are to be contrasted. A great fallacy of the work economist lies in dissociating product and play, work and pleasure. Product without "climax of satisfaction" (to use a term of Professor Patten's) in education or in life is a doubtful gain. To violently dissociate the two in theory or in practice is a crime against humanity. To exist under a play economy is life, to exist under a work economy (insofar as it violates the characteristics of play) is not living but dying. Long since formal education under a work economy would have perished from the earth had it not continually and inadvertently fallen, through the very force of life in the young, into much that belongs to a play economy. I do not mean to say that the two are hopelessly antagonistic. I mean to say rather that play and work may have and ought to have a common part in life, that they may be and ought to be in many respects physically and psychologically identical. To make them so in education we need to determine and apply the laws of sequence.

*Compare Carr, "Survival Values of Play," Univ. of Col. Studies. Patten, "Product and Climax."

May I add just a word about the moral significance of education under a play economy. Professor Dewey says, "All conduct springs ultimately and radically out of native instincts and impulses." And Professor Perry, "The self-preservative impulse of the simplest organism is the initial bias from which, by a continuous progression, in the direction of the first intent, have sprung the service of mankind and the love of God." I have said that the demands of structure for function was to us "original" virtue and not "original sin." There is a power within us which is ourselves that makes for righteousness. Virtues are instincts brought to flower, vice is obstructed sequence, thwarted growth, arrested development. I have not the time to give concrete illustrations, as I wish I had; for I believe that through play not work when rightly understood man reaches his highest moral development. Lest our ideal of sacrifice and voluntary endurance of pain should prove a stumbling block to some I will say, play answers even to these and is not, any more than happiness, conditioned always by the maximum of immediate pleasurable feelings. In his "Introduction to Philosophy" Paulsen says, "The goal at which the will aims does not consist in a maximum of pleasurable feelings but in the normal exercise of the vital functions for which the species is predisposed." * * * "The problem of ethics is to set forth in general outline the forms of life for which human nature is predisposed."

In conclusion, I hope I have sufficiently suggested happiness as an immediate, as well as an ultimate end in education. The older cultural aim of education was, in a sense, to teach how to live, and so far it was right, but it did not keep pace with the progress of man. A newer aim of education is to teach how to get a living. We need both, but we need most to teach how to live. The tragedies of life are spiritual far more than economical. The world needs product but it needs happiness more, and to teach a child how to get a living without teaching him how to be happy is to stop before the task is half completed. The opportunities for happiness in life are truly abundant. Perhaps you can recall David's song in Browning's "Saul":

"Oh, the wild joys of living! The leaping from rock to rock,
The strong rending of boughs from the fir tree, the cool silver shock
Of the plunge in a pool's living water, the hunt of the bear,
And the sultriness showing the lion is couched in his lair.
And the meal, the rich dates yellowed over with gold dust divine,
And the locust flesh steeped in the pitcher, the full draft of wine,
And the sleep in the dried river channel where the bullrushes tell
That water was want to go warbling so softly and well.
How good is man's life, the mere living! How fit to employ
All the heart and the soul and the senses forever in joy."

Rich were the sources of satisfaction even in primitive life. Richer far should they be in modern life. But in any community where product is divorced from pleasure, where satisfaction in life is detached more and more from work and especially where education fails to open up higher and higher avenues to enjoyment—there tragedies abound. The pursuit of happiness by the unenlightened descends to a search for lower and lower forms of pleasure. In my city is advertised “a dollar’s worth of thrills for a nickel.” Education is responsible for this. Education must get behind this love of happiness, the eternal heritage of humanity. It is my sincere belief that a play economy rather than a work economy in education is destined to bring the race to the state where universally man may say:

“How good is man’s life, the mere living! How fit to employ
All the heart and the soul and the senses forever in joy.”

THE RURAL SCHOOL AS A RECREATION CENTER

BY

CLARA L. VAN SLYCK

In a few of the rural districts a house has been built as a home for the teacher which, in connection with the schoolhouse, serves as a community center. In many districts of almost every state, the schools have been consolidated. The teachers in these schools have had training and practical experience in directing the play and games of children, in selecting leaders, and in appointing committees to carry out various forms of community recreation.

According to the report issued by the Bureau of Education on "The Status of Rural Schools in the United States," there are approximately 212,000 one-room one-teacher rural schools, "as a whole, housed in uncomfortable buildings, unsuitable from almost every standpoint, without proper furniture, or facilities for heating, ventilating and lighting."

The majority of the teachers of these schools are women, often mere girls who have received only an elementary school education.

Mr. Holman of our largest state, Texas, says of the rural districts of his state, and I think the same is true of the majority of rural districts: "Organization is not troublesome, enthusiasm is not hard to generate, but keeping lighted the fires of social progress is difficult."

This difficulty must be met by the rural school teacher who, although lacking educational advantages, usually possesses natural refinement, an open mind, and the gift of intuition and it has been well said that "comprehension is more fundamental than knowledge."

Representative teachers say that sometimes they spend months in a community without being invited anywhere or having an opportunity to become acquainted with the parents of their pupils, and they do not know how or where to begin with community recreation.

It might be well to establish the custom of the teacher taking the initiative. When she signs her contract she should obtain permission to use the schoolhouse some Saturday soon after school opens for the purpose of being "at home" to all the women and girls of the district. Definite hours should be set, say from three until five o'clock. All children like to give, or help give, that intangible something "a party," which is perhaps the best known form of recreation. The teacher should explain to them that the object of extending the hospitality of the school is to express the need of adult companionship and to show that the teacher appreciates the duties and possibilities of their school

as a part of the social life of the community. No attempt should be made to entertain with recitations and songs. All children under school age should be invited and the girls and boys of the school should plan to entertain these little ones with story-telling, hoop rolling, kite flying, and games—simple pleasures and not too varied.

The older boys should take charge of the conveyances, tie and untie the horses, and assist their mothers, older sisters and friends in every possible way, and with the older girls should assist the teacher in entertaining and in serving refreshments. In short, teacher and pupils should entertain as simply and as naturally as though their schoolhouse were a real home, and it *is* their home for many hours during the school year, and improvements in house and grounds will undoubtedly be made just as soon as circumstances permit.

This may be the beginning of a Parent-Teachers' Association, and if a warm dish or hot chocolate is served it may lead to the serving of warm lunches for the children during the winter months, especially in those localities where the children walk long distances to school over bad roads and in very cold weather.

Once acquainted with her neighbors the teacher will quickly discover how best to proceed to introduce various forms of recreation, and on whom she may depend for assistance, for it must be remembered that the teacher's first duty is to teach school, and to teach so well that the confidence of patrons will be assured. Therefore she needs many helpers.

If there is not a library in the district, or a travelling one that reaches the school, steps should be taken to provide one. It is said that a library is the easiest thing to procure for a rural school; that because of the distance from neighbors no one is more appreciative of the companionship of books, or so keenly feels the need of mental recreation as the dweller in an isolated rural community. The community may not be isolated, but the residents, owners of farms and tenants may be of varied nationalities and temperaments and each would like and really needs outside companionship which may only be obtained through books. For this reason the school library should contain books of travel, history, and good novels.

At recess and during the noon hour the pupils should learn to play a few active games. If the teacher has had no athletic training she can at least arouse interest and lead the search for someone to direct this form of recreation. There is an Athletic Badge Test for boys in which chinning, running and jumping are included and an Athletic Badge Test for girls which includes an Indian club race, a potato race, ball throwing and balancing. Directions for the events, which can be directed by the inexperienced teacher, and descriptions of the badges which are awarded

may be obtained from the Playground and Recreation Association of America, 1 Madison Avenue, New York City.

In some communities a Play Festival is an annual event, and it should be in *every* community. In some of the Southern States, notably Virginia and Georgia, the great annual occasion for recreation and festivity is the County School Fair. Preparations for these larger events may be carried on throughout the year. In order permanently to establish this custom, community interest must be kept alive, which can best be done by assigning a definite part to everyone. Karl von Stein once asserted that participation in public affairs is the surest way of completing the moral and intellectual development of a people. On another occasion he remarked that public spirit is formed only by direct participation in public affairs. Surely we have no public affair of greater importance or of more general interest to girls and boys, women and men, than that of recreation.

An excellent article on "Play Festivals," written by Dr. Myron T. Scudder, who originated the custom in this country of carrying out the rural play festival on a large scale, the country unit, may be found in the Country Life number of the Annals of the American Academy of Political and Social Science for March, 1912.

In that article Dr. Scudder mentions the help that may be given by the Y. M. C. A., the Y. W. C. A., the Corn Clubs, the Tomato Clubs, the Boy Scouts, and the Campfire Girls, but since it was written we have a National organization one of whose chief duties is "to help." I mean the Bluebirds, which as its name implies stands for happiness. This organization has its office with that of the Campfire Girls and has been formed expressly for girls between the ages of six and twelve years.

All of the young people belonging to these various clubs need adult companionship, a fact too often overlooked in every community, but especially in rural communities. The country boy and girl suffer from ignorance of social conventions, due to lack of opportunity for social experience. This opportunity should be provided by the older people and the schoolhouse may be used as one means to this end, especially on Saturdays when school is not in session. The young people should be encouraged to meet at this central place and to go in groups to picnics, skating parties, and other social and recreative gatherings. Each group should be accompanied by one or more adults. These adults should not accompany them merely as a duty or to note their behavior, but should go with them for the purpose of seeing that they have the best possible kind of an outing. Such companionship tends to increase habits of courtesy, unselfishness, and gracefulness in deed and word as well as act.

Boys and girls and adults from adjoining districts and near-by towns and cities should, for the sake of variety, be occasionally invited to share

these pleasures. It is unnecessary to go great distances to find recreation, and every available spot in the neighborhood should be utilized.

Any farmer will feel a keener personal interest in the school if it has held a picnic in his woods, or if he has taken considerable trouble to fence off a part of his pasture in order that the children may have a more suitable place than the schoolhouse grounds for playing games. I have heard it said over and over again recently that the farmer will not coöperate, that he is an individualist, and he may be, but if his interest is aroused he can give individual attention to the object of interest that will bring amazing results.

In one locality the blacksmith at the country cross-roads taught all of the boys of the school how a horse should be shod and also how to sharpen knives and scythes, and a farmer invited all the boys to his place and gave them a lesson in oiling farm machinery. While the boys were thus engaged, the girls were not neglected. The village dressmaker went to the school and gave a series of lessons in simple sewing and cutting. There were mothers in the community who could perhaps have given the same instruction, but the fact that it was given by a professional dressmaker added dignity to the course. I mention these instances because while not recreation as the term is generally used, they are coöperative forms of recreational work and produce the same spirit if not the same physical result that may be obtained in coöperative games. After each lesson of this kind a game would undoubtedly be played with more zest than if there had been no coöperative work preceding it. Besides it is said that the object of recreation in rural communities is not so much to produce physical as it is to produce social results.

The one time when every member of the family has leisure and may use the horses to drive somewhere together, if there is any place to go, is Sunday afternoon. At this time the schoolhouse should be open to all, and because of the inconvenience of the building, the difficulty of heating and lighting, the most should be made of the early fall weather and whenever possible the meetings should be held out of doors.

A committee of the American Musical Society is now at work to decide upon eighteen songs that will be printed for distribution and which it is hoped every one in the United States will learn to sing. The object of the Sunday afternoon meetings may be to learn to sing these songs, for every meeting should have an object, and every community should learn to sing together.

In the 212,000 one-room rural schools, over 6,000,000 children of varying ages are enrolled. All of these girls and boys need a means of expression, through art, poetry, music and literature.

I have found no more delightful form of self-expression which is espe-

cially adapted to rural communities than the drama. Plays may be selected according to the number and ages of the children who are to take part. The Drama League of America, La Salle Street, Chicago, furnishes lists of plays arranged according to ages of pupils and stating the number of persons required to produce each play. The Educational Dramatic League, 17 East 38th Street, New York City, a recent organization, is also prepared to give assistance to those in rural communities who wish to produce educational dramas. After a little experience the pupils may themselves dramatize favorite poems and events of history, and local history always contains much of interest. In this form of recreation all the young people of the district, whether in school or out, may join. During the winter months parts may be assigned and preparations made for presentation out of doors when the weather is favorable. Bible stories furnish a wealth of material for dramatization and may be presented on Sunday afternoons at the school and be enjoyed by everyone in the community.

From the drama may be developed that most satisfactory form of *community* expression, the pageant, in which the older people play so important a part and which in its highest form not only awakens an interest in the past, and describes the present, but best of all helps the community to express definitely its ideal for the future, and without ideals the young people can never be said to be really held. The growth of pageantry has led to the formation of the American Pageant Association, with offices at Temple Court, Boston.

As for leaders, Dr. Burnham says, "Expect leaders. *Locate possibilities* and warm by expectancy until you develop a flame of leadership."

And expect your leaders to learn what form of amusement and recreation is best suited to the needs of the young people of your community, and not to try to return to the spelling match if what the young people want is a folk dancing class. And in looking for leaders, bear in mind that the natural social leaders, whether in city or open country, are the women and girls.

THE SOCIAL FUNCTION OF PLAY

BY

LUTHER H. GULICK

Mr President and friends: First of all I must distinguish between recreation and play. Recreation is that to which one turns from the strenuous part of life and through which one seeks recuperation, rest and change. Play is that which one does when one is free to pursue the deepest things that one chooses to do, for the joy of the working, not from compulsion, not from economic necessity, nor the lash of public opinion. Play is responsible for the splendid achievements of human life, for it is self-actuated. I am speaking to-day of play, not recreation.

In attempting to formulate the "Camp Fire Girls" organization we were led to study afresh the social problem which we are facing. In the playground movement and the very wide recognition of these necessities we have endeavored to furnish *things to do*, places in which these things may be done—plays and games and recreations—and leadership, by which the traditions of play may be carried. We have been distressed at the fact that the children, particularly those in their teens, come and go on our playgrounds without becoming caught in the mesh of the finer social ideals which we are striving to establish and so having their lives lifted permanently to a new level of daily life. They come in and go out and are lost to us.

Somehow we must furnish, not merely to our playgrounds but to our communities, that which shall maintain a permanent grip on the individual. The home is now stepping into the community, and a large fraction of life is community life as distinguished from home life. School is community life, for example. It has been our endeavor to discover the specific steps by which the mesh of public opinion, of custom, might take hold of young people—in our case girls—so as to accomplish in the community what used to be accomplished in the home with reference to social relations.

We are told that there are two basal human desires, and that human life consists in the working out of these two desires with all their orientation and complexities—hunger and love. We are told that hunger, in the main, has been responsible for the development of business, with all that that means, as an economic basis; that love has been responsible for the development of the home, the love of mothers for their children, out of that growing the love of men and women for each other, the

love of friendship, comradeship, and all the great social relations of the world. Business has been predominantly masculine; social life has been predominantly feminine.

Life to-day seems to give more adequate scope to those activities which are related to business than to those activities which are related to the affections. The home is changing its function; there is no longer adequate opportunity for the girls of New York, for example, to have adequate human relationships in their homes. I speak now specifically of the girls who have occupation. (More and more all girls and women are becoming working people, in the sense of having an economic relation to the community.)

The primary result is loneliness. It is not enough to provide things to do. Somehow or other the opportunity which we now lack for affection, friendship, comradeship, must be given; it is as basal as hunger. The purposes of this is not merely to prevent disaster; it is not our purpose to pull the safety valve and thus relieve the danger. Our purpose is to find out how the affections may flower out and fruit into spiritual life rather than to lead to disaster.

Love, in all its great relationships, is as basal as hunger. Our cities make no provision for it. It is human life, life itself, rather than the means to life; business and work are means to life; friendship and the affections are life; and, whether right or wrong, whether in ways that are wholesome or ways that lead to social disaster, this we must pursue. To provide channels for the affections, rather than to furnish dams against the affections, must be the primary business of society. The bigger the dam across a living stream, the greater the disaster when it breaks. Our social engineers must study the making of new channels, meeting the new conditions of society, by which this search for human relations and affection shall enrich the great fields of desire, for only thereby can they bring forth perfect product. It is not enough to prevent; prevention, damming, alone is hopeless.

How, then, do the affections grow? What are the definite, simple, concrete steps which a national organization may undertake to promote the affections?

First of all, it is necessary that people have wholesome things to do together. Social life cannot be pursued directly, any more than happiness can be pursued directly. Have you ever attended a social gotten up by some good people, who said, "These people ought to be social; we will get them together; not give them anything to do, but just let them come together and be sociable?" If there is anything that prevents social life it is compulsion.

It is necessary, then, to have games and learn to "cook meats in four ways," and to camp out and go fishing and play golf, and build

up a better Fourth of July celebration, and a thousand different things, good in themselves, but the main significance of which is the human relations that are established in the process of doing those things. The main thing is "Who with?" not "What?" The main thing about the teacher is not the subject, but the character and the infecting ability of the teacher.

Secondly. In order to have the development of wholesome human relations, continuity is necessary. No matter how charming people are, it is necessary to know them from time to time, or continuously, to feed the opportunity for friendship. Hence, a national organization must provide for continuity of relations within each of its constituent groups, and this group should be small enough so that there should be opportunity and possibility for intimate personal friendship between every member of the group. That is why we limit it to twenty; it must be large enough to carry the team spirit, hence we say at least six.

Third. It must provide something outside of the routine compulsions of life. The person alongside of whom we work in our daily activity we may be friends with or we may not be; but, so far as we have been able to observe, those ties which form the mesh of custom and hold us, are formed through voluntary association with those whom we like, doing things that we like, and having common experiences which we share of a non-compulsory character.

Fourth and lastly. It is necessary that there be "tradition carriers" and tradition leaders, because the old mother-and-daughter relation has been broken. It is by this relation that woman tradition, traditions of social life, of charm, of gracious relationship to the home, have been carried on through the generations. Daughters are not getting these adequately from their mothers, because daughters and mothers do not have the activities together which they used to have. For this reason we need tradition-carriers; hence, the "guardian of the fire."

This, then, is woman's program: To bring to the community that social, wholesome life, with opportunity for affection, which always has belonged to the home but which now cannot be confined within it. And the primary purpose of the Camp Fire Girls, its ritual, its symbolism, its ceremonies, is to promote happiness through the functioning of the highest part of human nature, to give opportunity for the affections; and the honors, excellent as they are in themselves, are but the means to bring about the transfer of character and the production of happiness.

THE EFFECT OF ATHLETICS UPON HEALTH

BY

C. F. STOKES

The subject of the effects of college athletics upon after life is one which has come to the fore very rapidly in the past two or three years, due to the fact that we are only now beginning to perceive the results of the strenuous athletics as they have been pursued in the last 20 or 30 years.

By "college athletics" is meant the system of preparing young men for and carrying on athletic contests in preparatory schools and colleges. Boyhood exercises and sports need not concern us in this paper, for at this age (17 and under) there is not that singleness of purpose which drives men to exceed their strength, and the recuperative power among the young is such as to readily care for the temporary strains encountered. Likewise the discussion of the professional athlete is unprofitable, for in them we have a class of individuals who were fitted to withstand the grind of preparation and who by natural bent or desire have made athletics their life work, thus avoiding the ill effects of inactivity following upon strenuous physical development.

It is undoubtedly a fact that from a *mental and social* standpoint the advantages of athletics to a college man far outweigh the disadvantages. Such an individual enjoys privileges not accorded his non-athletic companion. He wins the friendship, respect and admiration of instructors and upper-classmen, and comes in contact with more men who, both in college and in after life, can not fail to contribute to his general education, polish and social and business advantages. Under the present system such men are probably fully the mental equals of those who engage in strictly literary and scientific studies. The regular and healthful life that they must lead in order to excel in athletics insures a healthful mind action. He may lose the finer points of mental training, but this is made up for by the schooling he receives in discipline, patience and in silence under adversity. The fortitude and self-restraint, discipline, tact and submission gained on the athletic field are traits that may be attained in after life only at a great cost and with great humiliation.

The study of athletics from a *physical* standpoint, however, is not so simple a problem and is one which has given rise to the most astonishing differences of opinion, as is demonstrated so clearly in the "Symposium on the Effects of Athletics on Young Men," which appeared in

the *Medical Times* of February, 1912. These varying views undoubtedly are due to a failure to consider all the points involved and to expressions of opinion based upon general impressions subject to the fallacies of memory rather than upon actual, carefully worked out statistics.

Unfortunately, such statistics are most difficult to obtain and those that may be considered most reliable are so incomplete as to give little information of real value. In most civil institutions physical records are kept only for those few individuals who by reason of a leaning toward athletics and a certain physique and ability are able to attain the front rank among the athletes of that college. The bulk of the students who pursue their non-athletic way are ignored; those who attempt to make a team or crew and fail by reason of physical unfitness are lost track of; and, finally, even the star athletes who have won the right to wear the "Y" or the "H" or the "C" pass beyond all consecutive observation almost immediately after graduation. With such a state of affairs existing it is evident how valueless are any attempts to reach conclusions.

The ideal way to obtain absolutely reliable comparative data would be to take a body of men carefully picked for similarity of physique; open detailed physical records in every case; observe and record their condition throughout their college life; one-half pursuing a non-athletic course, the other half taking up athletics (this latter to include those who try for teams and fail as well as those who succeed); and, finally, after graduation, to follow them closely in their after life to the time of their death. It is manifest to all that in civil life such a process is impracticable, but in the Government military services conditions are such that this could be readily carried out.

All applicants for appointment to the United States Naval Academy (the institution in which practically all aspirants for commissions as line officers of the Navy receive their training) are given a thorough physical examination, and a minute record of these observations is kept. As there is a carefully prepared physical standard set, all those successfully passing the physical examination are of a fairly uniform physique. Throughout the four years of instruction in this institution all these young men, both athletes and non-athletes, are under constant physical surveillance, and after they graduate they are examined physically once a year up to the time of their death or retirement, records of each examination being filed. In addition, a careful history of every physical disability, disease or injury which may have pensionable status is recorded during this entire period. Here, then, are conditions under which in the future statistics may be prepared that would be as accurate as any statistics could be.

Unfortunately for our present gratification and information, the mad

rush for athletic excellence in the Navy had not reached its present pace 20 years ago, and consequently sufficient time has not elapsed to render it possible to state definitely its results. Also, interest was not aroused in this subject until so recently that many details necessary to an accurate comparison are lacking. But in spite of these drawbacks interesting data has been obtained from the study of 1,205 health records of midshipmen who have passed through the Naval Academy and entered the Navy as commissioned officers.

In 1911 the medical records of 625 star or specialized athletes of the classes of 1892-1911, inclusive, at the Naval Academy were carefully examined and the results of this investigation published. In 1912 the records of 580 non-athletes of the same classes were examined, not so much in the expectation that the physiological question involved was susceptible of being answered definitely by mathematics alone, as in response to the general request for further information.

The results obtained are interesting and, briefly, show that 22 casualties (retirements and deaths) occurred among the non-athletes as compared with 21 among the athletes. Further, it was found that from those diseases selected, to which athletics have a possible or probable causative relation, there has been but one death among non-athletes as compared with six for the athletic group. The number still in the service whose medical records show the listed abnormal physical conditions is 187 for non-athletes as against 198 for athletes. The following conditions or disabilities show an excess amounting to 50 per cent. or more among athletes: Arterio-sclerosis, valvular disease of the heart, cardiac irregularity, cardiac dilatation, cardiac hypertrophy, gastric disturbances, albuminuria, general poor health, obesity, and tuberculosis, and various traumatic lesions as well.

The bare statement of fact as it appears above shows that in casualties and in the listed abnormal physical conditions the non-athletic and the athletic are about equal, but this is misleading without due consideration of other factors involved. It must be remembered that the athletic group consists of a body of "twice picked" men, yet despite the handicap of supposedly better physical material the casualty list of the athletes about equals that of the non-athlete. Another element in this consideration which must carry great weight is the fact that those who attempted to enter the athletic list and failed are counted among the non-athletes. And further, the records naturally fail to show those whose physical disabilities are of such a character as not to cause their admission to the sick list, yet whose efficiency has been impaired by them. There are many such officers in the service who consult medical officers for cardiac irregularities, obesity or physical staleness, in other words, for conditions that may be attributed to excessive physical development followed

by periods of physical quietude exacted by service conditions. These cases do not become matters of record unless they are of such moment as to render the officers wholly unfit for duty, yet such influences in many instances materially affect the military efficiency of the individual and should be averted if possible.

It is interesting to note that among the 625 athletes there were 15 individuals who developed hernia, and this disability appears to be associated particularly with a football record. This game, though somewhat hazardous as played, is considered dangerous by reason of the disabling after effects that, in my opinion, make it questionable as a sport to be encouraged, at least where future naval officers are being trained. Long distance crew or foot racing appear to throw the greatest strain on the organism, as the effort is severe as well as long continued.

It seems reasonable to suppose that the disabilities among the athletic list are largely due to spectacular athleticism among young men who are prone to over-train or hazard too much, and would not have been acquired had the over-straining and over-training not been indulged in. The prolonged, rigorous course of physical exercises necessary to excellence in physical sports is believed to be dangerous in its after effects upon those who indulge in athletic sports sufficiently to excel therein, and I wish to emphasize the fact that we must look among those who tried to excel and failed for the after effects of athletics, as it is here, I am convinced, that we will find a high degree of damage.

A large element for harm is the more or less permanent employment of professional coaches and trainers whose chief end and aim is to produce winning teams regardless of effect upon material, for upon success depends largely their reputation and occupation.

I am thoroughly convinced that were it possible to make a similar study of the students at civil colleges the results would be the same.

The physiological side of this question need be touched upon only lightly. All are aware of reasons for the deterioration which takes place in the trained athlete when he leaves college. The change in mode of life, the inability to take exercise, the degenerative processes that take place in the muscles, the demands made upon the organism by the over-developed musculature that can not be met without great strain on the entire economy, all play their part. Such an individual tends to become obese, to lose physical stamina and in the end fails to render as many years of efficient service as does his less athletic but symmetrically developed classmate. One of the most important elements in the process is that all the excessive development takes place in adolescence.

The function of the Naval Academy is to equip its graduates in the best possible manner to fulfill the demands made upon its officer personnel under all service conditions, and every college has a similar duty

to perform. The "best single qualification to withstand the strain and contest of modern life is good physical health," and without this the enjoyment of success and even success itself is of little value. Aside, then, from the question of injuries produced, the test of modern college athletics lies in the question as to whether or not they help the business or professional man in his after life. Personally, I am convinced that this function is not fulfilled. I feel sure that those who are in a position to judge will agree with me. Not only does the modern method of physical training turn out men who easily fall prey to degenerative changes, but it wholly neglects the bulk of the young men in college life, they, the "non-athletes," being left to gain what physical development their own initiative inspires, unguided and unrecorded. The tendency is to select those already well developed, train them and grind them until the "unfit" are weeded out, and them to over-train the remainder.

I am not arguing for less athletics, in fact, I believe we should have more athletics, but they should be of a character to produce a well-rounded development of all individuals instead of an over-development of a few who are already well equipped physically. Such physical training should be compulsory, marked upon a basis of standards, and be as much a requirement for graduation as excellence in Greek, Latin or mathematics. It should produce a supple, agile, all-around well developed individual, not a muscle-bound mass of brawn. Clear minds and developed muscles are conducive to prompt, well-directed action in emergency, and it is this mental and muscular balance and resulting self-reliance for which one should strive.

If in gun making we found we could employ a process of manufacture which would yield a gun that gave us conspicuous excellence at the first battle practice, but which was followed by signs of undue deterioration afterwards, we would cast aside such a process and seek one that would produce more enduring qualities—one likely to turn out a gun that would give a good account of itself in actual warfare—for which it was really intended. So it is with the units of personnel that come out of the Naval Academy or from any civil institution. If high specialization in athletics by a small group of men each year leads to an undue proportion of disability afterwards, then it is a matter of serious consideration, aside from the tendency of those not athletically inclined to stagnate on the side lines. Further, the man who steps out of a boat, comes off the football field or leaves the track, should feel exhilarated by his exercise. Is it logical to suppose that the man who is lifted out of a boat, collapsed, or is carried off a football field or track in the same condition is not harmed thereby?

Based upon my studies and observations, certain recommendations

have been made to the Secretary of the Navy in an effort to obtain a proper method of physical training, and even though such a short time has elapsed since the first steps were taken, favorable results are already evident.

In 1911 an examination of the reports on the physical condition of the four classes at the Academy showed a marked gain in average weight and strength during the first year, a slight loss of average weight and a decided loss of strength during the subsequent years of training. As this bore a constant relation to the decrease in compulsory exercise during those years, as shown by the reports, it was evident that the mind was being cultivated at the expense of the body in the case of the third, second and first classes. In order to obviate this condition, compulsory exercise for all classes was recommended and put into effect, and reports for 1912 show that the previous tendency of the upper classes to retrograde in strength and weight has not only been checked, but an actual gain has been made.

The physical training at the Academy for years has been more or less unsatisfactory, and studies were inaugurated three or four years ago for the purpose of establishing a better method. As a result the Swedish system of gymnastics was tried and, in addition, a number of officers and men of the United States Marine Corps were detailed for instruction under the medical officer in charge of physical training at the Academy, with the object of implanting this system in the marine corps. It is now in operation in this corps at the Naval Academy, and has proven such a success that it is being introduced throughout the service. In Academy athletics the training table has been done away with; the distances for crew and track races has been reduced, and a strong plea for the abolition of professional coaches and the placing of physical training in the hands of a qualified medical officer has been made, for those who have not been trained in anatomy, physiology and pathology can not avert the harmful effects of abused athletics nor institute exercises beneficial in character.

The notable advances made in the betterment of the physique of all members of the Academy indicate that the trend of physical training in the Navy is in the right direction—*i. e.*, the muscular development of the entire personnel to a higher rational standard rather than the production, from material already fit, of a comparatively few specialists which from a service utilitarian point of view is useless if not actually harmful.



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